Vol. 930 Number 3

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AMOCO OIL CO.
JAN 29 1975
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PATENTS

January 21, 1975

U. S.
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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

January 21, 1975 Volume 930 Number 3

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PATENT OFFICE NOTICES

Publication of Applications Under Trial Voluntary Protest Program

The January 28, 1975 issue of the Official Gazette will include publication of information identifying the 665 applications in which secrecy was waived under the Trial Voluntary Protest Program announced by the Notice of May 7, 1974, published at 923 O.G. 2 on June 4, 1974. The identifying information will include matter similar to that used in the Official Gazette for patents and will also list the references cited by the Patent Office and the number of the examining group in which the application was examined.

From January 28, 1975 to April 28, 1975 the application files of the applications listed in the Official Gazette will be made available for public inspection upon written request in the examining group identified.

Applications in which secrecy has been waived under the Trial Voluntary Protest Program will be published in printed form, similar to that of printed patents. Printed copies will be available on and after January 28, 1975 at the prices set by statute for patent copies. Orders for copies of the published applications must include the "B" prefix before the Serial Number to differentiate them from orders for patents.

Orders for copies of the January 28, 1975 Official Gazette may be placed with the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The price is $6.60 per copy.

Any protests relating to the patentability of these published applications must be filed in writing in the Patent Office no later than April 28, 1975.

C. MARSHALL DANN,
Dec. 2, 1974 *Commissioner of Patents.*

REMINDER

Furnishing Assignment Data at Time of Payment of Base Issue Fee

Practitioners are once again reminded of Rule 334, revised November 1969, which requires that . . . "At the time of payment of the issue fee, a statement must be furnished indicating whether or not an assignment has been filed with the Patent Office. In the event an assignment has been filed, such statement must include the name of the assignee and indicate whether or not an acknowledgment of a recorded assignment has been received from the Patent Office."

The Issue Fee Transmittal Form POL 85*b*, revised December 1969 and May 1973, provides space (Item 2) for Assignment Data which should be completed to comply with the Rule. Unless an assignee's name and address are identified in Item 2 of the Issue Fee Transmittal Form POL 85*b*, the patent will issue to the applicant. *Assignment Data printed on the patent will be based solely on information so supplied.*

A request for correction of error arising from incomplete or erroneous information furnished in Item 2 of POL 85*b* will not be granted as a matter of course and will be subject to adherence to all the requirements of Rule 323.

The recording of instruments in the Assignment Division is not affected by this Notice.

WILLIAM I. MERKIN,
Dec. 19, 1974. *Assistant Commissioner for Administration.*

Trademark Seminar in Office Practice and Procedure

A Seminar in Office Practice and Procedures was established in 1973 as a training course for new trademark examiners. The course covers all phases of trademark law, office practice and procedure. The seminar deals with both substantive and procedural issues. Among the topics covered are types of marks, types of applications and registrations, ownership of marks, procedural and substantive examination of application, with emphasis on the statutory grounds for refusal to register, classification of goods and searching.

Members of the Seminar will prosecute a sample application through the various stages of Office procedures beginning with the initial examination and preparation of a first action, the final refusal to register based on statutory grounds, the writing of an examiner's statement on appeal, and concluding with an oral hearing before the Trademark Trial & Appeal Board.

Lectures are conducted by supervisory personnel, senior examiners, members of the Trademark Trial & Appeal Board and attorneys from outside the Patent Office.

The Seminar is given in the U.S. Patent Office, 2011 Jefferson Davis Highway, Crystal Plaza, Arlington, Va. The Seminar is conducted twice a year. The next course is scheduled for Feb. 3 to March 7, 1975. Classes meet from 9 : 00 A.M. to 11 : 30 A.M. Monday through Thursday.

While the course is intended for new trademark examiners, a limited number of applicants from government agencies and from outside the government will be accepted for training on a space available basis. The Seminar is normally limited to ten students. To be eligible for training, a candidate should possess a law degree, and be involved in trademark practice. The fee for attendance at this course is $400.00.

Additional information concerning this Seminar may be obtained from the Office of Trademark Program Control at the Patent Office. Inquiries should be addressed to the Commissioner of Patents, U.S. Patent Office, Washington, D.C. 20231, Attention : Office of Trademark Program Control, or by telephone at 703–557–3881.

RENE D. TEGTMEYER,
Jan. 3, 1975. *Assistant Commissioner for Trademarks.*

Certificates of Correction for the Week of Jan. 21, 1975

D. 230,479	3,803,164	3,835,891	3,847,039
D. 232,873	3,806,408	3,835,898	3,847,163
3,197,093	3,806,535	3,837,833	3,847,329
3,586,863	3,806,607	3,838,159	3,847,462
3,617,250	3,808,193	3,838,976	3,847,725
3,689,486	3,810,206	3,839,619	3,847,817
3,693,612	3,810,886	3,839,771	3,847,839
3,699,124	3,811,846	3,840,326	3,848,052
3,702,839	3,812,005	3,840,386	3,848,106
3,740,216	3,813,529	3,840,455	3,848,419
3,740,420	3,814,704	3,840,533	3,848,744
3,742,115	3,815,542	3,840,603	3,848,824
3,743,654	3,819,681	3,840,688	3,848,850
3,746,792	3,819,727	3,841,227	3,848,861
3,747,962	3,821,174	3,841,236	3,849,023
3,748,140	3,822,322	3,841,483	3,849,323
3,755,271	3,822,645	3,841,507	3,849,333
3,756,927	3,823,008	3,841,921	3,849,364
3,760,876	3,824,916	3,842,148	3,849,532
3,763,285	3,825,577	3,842,172	3,849,647
3,764,294	3,825,583	3,842,804	3,849,904
3,767,840	3,827,268	3,843,094	3,849,971
3,768,081	3,827,875	3,843,377	3,850,001
3,771,409	3,828,206	3,843,539	3,850,050
3,774,245	3,828,868	3,843,576	3,850,301
3,774,663	3,829,494	3,844,077	3,850,384
3,775,464	3,829,564	3,844,172	3,850,445
3,779,720	3,829,964	3,844,259	3,850,620
3,787,537	3,830,124	3,844,304	3,850,724
3,789,828	3,830,271	3,844,882	3,850,875
3,790,577	3,831,531	3,845,150	3,851,072
3,793,325	3,831,637	3,845,166	3,851,139
3,800,548	3,832,329	3,845,731	3,851,366
3,800,887	3,832,419	3,845,839	3,851,445
3,801,609	3,833,356	3,845,943	3,851,533
3,802,189	3,833,599	3,846,105	3,852,172
3,802,991	3,834,471	3,846,360	

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,345,434, R. M. Griffith, BLEND OF PARTICLES OF CROSSLINKED THERMOPLASTIC POLYMERS WITH NON-CROSSLINKED THERMOPLASTIC POLYMERS, Interference No. 96,661, decided Aug. 5, 1969, claims 1, 5, 7 and 8.

Patent No. 3,490,383, J. T. Parrett, HYDRAULIC PUMP OR MOTOR, Interference No. 98,642, decided Sept. 24, 1974, claims 1–8.

Patent No. 3,544,914, M. Suga, SEMICONDUCTOR HIGH FREQUENCY AMPLIFIER DEVICE, Interference No. 98,547, decided Sept. 23, 1974, claims 1–6.

Patent No. 3,612,832, A. Goldstein and F. M. Pintus, EMBOSSMENT READERS FOR IDENTIFICATION CARDS AND THE LIKE, Interference No. 98,333, decided Sept. 17, 1974, claims 1, 2, 4, 7 and 8.

Patent No. 3,644,301, W. S. Anderson, 1-METHYLCYCLOPROPENE COPOLYMERS, Interference No. 98,323, decided Sept. 24, 1974, claims 1, 2, 3, 4, 5, 8 and 9.

Patent No. 3,680,037, S. Nellis, J. E. Kopf and A. R. Reti, ELECTRICAL INTERCONNECTOR, Interference No. 98,404, decided Sept. 25, 1974, claims 1–9 and 11.

Patent No. 3,700,541, R. H. Shrimpton and K. W. Dunkley, PRINTERS' BLANKETS, Interference No. 98,187, decided Sept. 27, 1974, claims 1, 4, 6, 9, 11, 12 and 16.

Patent No. 3,712,192, S. Ono and I. Hamaguchi, DEVICE FOR CONTROLLING EXPOSURE TIME IN A CAMERA, Interference No. 98,468, decided Sept. 18, 1974, claims 1 and 4.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 4, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-31-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids: Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-1-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-6-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-12-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-28-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-29-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-10-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-2-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-16-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	7-27-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-1-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-17-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-1-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-15-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	6-3-74

Expiration of patents: The patents within the range of numbers indicated below expire during December 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,814,802 to 2,818,566, inclusive
Plant Patents..... Numbers 1,661 to 1,671, inclusive

REISSUES

JANUARY 21, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,304
CHRYSANTHEMUM PLANT

Sing Ling Lee, Mountain View, Calif., assignor to Yoder Brothers Inc., Barberton, Ohio

Original Plant Patent No. 3,249, dated Aug. 1, 1972, Ser. No. 97,396, Feb. 11, 1970. Application for reissue Apr. 13, 1973, Ser. No. 350,907

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of chrysanthemum which is characterized particularly as to its uniqueness when compared to the parent cultivar Improved Albatross by its *3–4* [5–7] days earlier and more uniform response, 1" larger and more tightly incurved flowers, approximately ⅛" wider petals which undergo less twisting and reflexing, *and which are tubular and closed at the base and flare to a rounded deep keel which tapers to a blunt tip, with most petals having a finger-like protuberance(s) which arise on the side of the petals near the opening of the tubed base when the cultivar is grown at a minimum temperature of 60° F., or above for initiation and development;* fewer staminodal petals, stronger heavier stems, 1"–3" taller depending on culture, foliage broader lobed with less serration, its superior flower form and form retention, and its superior grade performance.

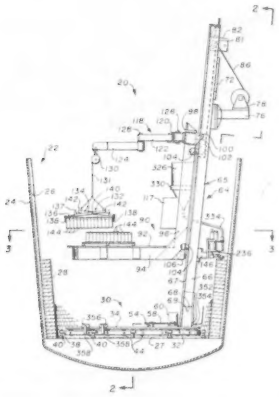
28,305
AUTOMATED BRICKLAYING DEVICE

Ronald Eugene Williamson, Hammondsville, and Sidney Clark Porter, Jr., East Liverpool, Ohio, and Kenneth Frederic Shotting, Coraopolis, Pa., assignors to Combustion Engineering, Inc., Windsor, Conn.

Original No. 3,757,484, dated Sept. 11, 1973, Ser. No. 253,546, May 15, 1972. Application for reissue May 3, 1974, Ser. No. 466,566

Int. Cl. B65g *37/00;* **E04g** *21/22*

U.S. Cl. 52—749 **34 Claims**



1. An automated bricklaying device for laying out the brick lining of a vessel, the device comprising:

a delivery means for delivering a series of bricks in turn to the circumference of the vessel to be set as the lining thereof;

a brick positioning means associated with said delivery means for *both circumferentially and laterally* positioning and firmly setting each brick in turn in the lining as it is delivered to the circumference of the vessel;

a supporting means for supporting said delivery means and said brick positioning means inside the vessel and for permitting, of said delivery means and said brick positioning means, longitudinal movement along, reciprocal lateral movement relative to and revolutional movement about an axis thereof positioned within and substantially parallel to the axis of the vessel to be lined;

an operating means for moving said delivery means and said brick positioning means longitudinally along, laterally relative to and revolutionally about said axis of said support means so as to position said delivery means and said brick positioning means relative to the circumference of the vessel; and

[a] *automatic* control means for controllably operating said operating means [after a brick has been positioned in place in the lining for properly positioning said delivery means and said brick positioning means] *including means for stopping said operating means when said delivery means and said brick positioning means are properly positioned* for the placement of the next succeeding brick in the lining, *said means being responsive to the position of the lastly laid brick in the lining.*

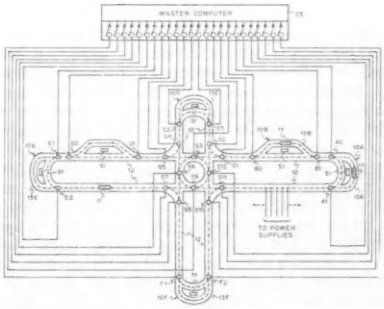
28,306
AUTOMATIC ELECTRIC POWER SUPPLY AND SPEED CONTROL SYSTEM FOR AUTOMATED DRIVERLESS VEHICLES

Howard B. Burke, Jr., Danvers, Mass., assignor to Avco Corp., Cincinnati, Ohio

Original No. 3,687,082, dated Aug. 29, 1972, Ser. No. 70,953, Sept. 10, 1970. Application for reissue Oct. 1, 1973, Ser. No. 402,452

Int. Cl. B60l *9/30*

U.S. Cl. 104—152 **12 Claims**



1. In an automatic vehicle operation system for controlling the speed of vehicles travelling in a single direction over a plurality of roadways, the combination comprising:

a. a plurality of successive aligned electrical power seg-

ments spaced one from another along at least a substantial portion of the length of said roadways;

b. a vehicle having a driving vehicle induction motor for travelling along said roadways;

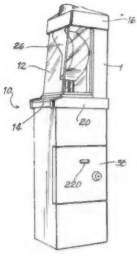
c. means for coupling said power segments to induction motor means in a vehicle adapted to travel and travelling along said roadways; and

d. electrical power source means coupled to said power segments for producing a plurality of frequency varying waves effectively travelling along said power segments, the frequency of said travelling waves varying cyclically at said power segments whereby said vehicle induction motor will receive power of a frequency as to decrease its [torque] *driving force* for an increase in vehicle speed and increase its [torque] *driving force* for a decrease in vehicle speed from the effective speed of said travelling wave as it travels along said power segments.

28,307
EXACT FARE SYSTEM

George G. Dominick, Hoffman Estates, Rinaldo Sciacero, Arlington Heights, George I. Wimpffen, Wheaton, and Theodore L. Kardos, Chicago, Ill., by Qonaar Corp., Elk Grove Village, Ill., assignee

Original No. 3,670,955, dated June 20, 1972, Ser. No. 20,884, Mar. 19, 1970. Application for reissue Aug. 31, 1973, Ser. No. 393,430
Int. Cl. G07b *15/00*
U.S. Cl. 232—7 **30 Claims**

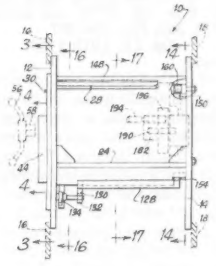


1. In a construction for collecting fares and the like comprising a fare deposit section, an inspection surface defined in said deposit section for temporarily holding fares deposited, manually operable means for dumping fares from said inspection surface into a cash box area, a cash box receptacle defined in said cash box area, and a removable cash box adapted to be received in said receptacle, said cash box defining an access opening, closure means in said cash box for blocking said access opening for preventing access to the interior of the cash box, means normally locking said closure means against movement relative to said access opening, means defined by said receptacle operating to unlock said closure means upon insertion of said cash box into said receptacle and to thereby permit rotation of said cash box relative to the receptacle to locate the cash box in position such that the access opening will receive fares dumped from said inspection surface, means for locking said cash box in place in the receptacle upon rotation away from its inserted position and toward said receiving position, and wherein said closure means is automatically closed during rotation of the cash box back to said inserted position and prior to removal of the cash box from the receptacle.

28,308
CASH ACCEPTANCE RECEPTACLE

George G. Dominick, Hoffman Estates, Rinaldo Sciacero, Arlington Heights, Leonard J. Weber, Broadview, George I. Wimpffen, Wheaton, and Theodore Louis Kardos, Chicago, Ill., by Qonaar Corporation, Elk Grove Village, Ill., assignee

Original No. 3,693,870, dated Sept. 26, 1972, Ser. No. 147,360, May 27, 1971. Application for reissue Jan. 30, 1974, Ser. No. 438,026
Int. Cl. E05g *1/00*
U.S. Cl. 232—16 **28 Claims**

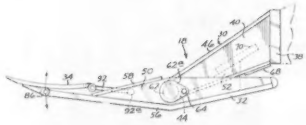


1. In a collection receptacle for receiving valuables from a box wherein the box includes a discharge opening and a wall normally covering the discharge opening, said wall being movable relative to the discharge opening to thereby permit discharge of the valuables into the receptacle, the improvement wherein said receptacle defines an area for receiving said box, a door for closing access to said area, drive means carried on said door for engaging said box upon closing of the door, and means for operating said drive means whereby relative movement is developed between said box and said wall to provide for said discharge of said valuables into the receptacle.

28,309
ROLL CLAMP

Stanley E. Farmer, Gresham, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Original No. 3,690,714, dated Sept. 12, 1972, Ser. No. 67,235, Aug. 26, 1970, which is a continuation of abandoned application Ser. No. 814,919, Apr. 10, 1969. Application for reissue Mar. 7, 1973, Ser. No. 338,838
Int. Cl. B66f *9/18*
U.S. Cl. 294—88 **6 Claims**



1. In a roll clamp including a frame and a pair of opposed arm structures mounted on said frame actuatable to clamp onto a roll, said arm structures mounting at the forward extremities thereof curved clamping pads for clamping against substantially diametrically opposite sides of a roll, the improvement comprising a construction for at least one arm structure in the form of

an arm base which is mounted on the frame for powered adjustable movement toward and away from the opposing arm structure to place the arm struc-

ture at different positions within a range of relatively adjusted positions with respect to the opposing arm structure for the purpose of clamping onto a roll, said arm base having a fixed position on the frame in a given adjusted position for said one arm structure within said range, a forward arm section projecting forwardly of the arm base mounting the curved clamping pad,

means pivotally mounting the forward arm section on the arm base for swinging movement about a pivot axis located toward said frame from said pad and the load center of a roll clamped between the pads of the two arm structures, said pivot axis accommodating free swinging of the forward extremity of the forward arm section in the same general directions as the directions in which the arm base is movable.

first limit means interposed between the forward arm section and arm base limiting swinging movement of the forward arm section relative to said arm base in a direction away from the opposing arm structure beyond a defined first limit position for the forward arm section, and second limit means interposed between the forward arm section and arm base limiting swinging movement of the forward arm section relative to the arm base in a direction towards said opposing arm structure beyond a defined second limit position,

[The] *the* forward arm section having an at-rest position on the arm base which the arm section occupies absent holding onto a roll and with said one arm structure positioned in different positions within said range of adjusted positions, said at-rest position for the forward arm section being intermediate said first and second limit positions, the arm section in said at-rest position projecting forwardly from said frame to be in a position to engage a load, and

biasing means yieldably holding said forward arm section in its said at-rest position, said forward arm section during initial positioning of the roll clamp adjacent a roll thus being afforded limited play in swinging from its said at-rest position toward one of its limit positions.

28,310

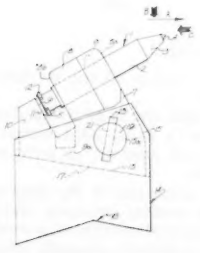
MEANS FOR REMOVABLY AFFIXING CUTTER BIT AND LUG ASSEMBLIES TO DRIVEN ELEMENTS OF A MINING MACHINE OR THE LIKE

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio

Original No. 3,749,449, dated July 31, 1973, Ser. No. 188,778, Oct. 13, 1971. Application for reissue Apr. 29, 1974, Ser. No. 465,360

Int. Cl. E21c *35/18*

U.S. Cl. 299—93 **60 Claims**



1. In a mining machine and the like of the type having at least one driven element adapted to advance a plurality of cutter bit and lug assemblies in the cutting direction, said cutter bits each having a cutting tip to act upon the material being cut, means for removably affixing said lugs to said driven element, said means comprising a block-like base member supporting each lug, said base member having a front portion facing in the cutting direction and a rear portion facing in the opposite direction, said base member having a bottom end affixable to said driven element, said base member having an upper portion to engage said lug, one of said lug and said upper portion of said base member being bifurcated, the bifurcations extending in a direction from said front portion toward said rear portion of said base member, the other of said lug and said upper portion of said base member being receivable between said bifurcations, at least one surface on said upper portion configured to lie in parallel abutting relationship with at least one surface on said lug, said at least one base member surface lying at an agle to the cutting direction of less than 90° and being non-parallel thereto so as to sustain the bulk of the resultant cutting forces on said base member, said angle opening in the direction of advance of said driven element.

28,311

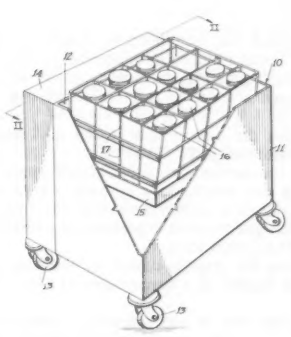
DISPENSING APPARATUS

Gilbert A. Cummings, Norwell, Mass., assignor to Peters & Co., Inc., Boston, Mass.

Original No. 3,694,044, dated Sept. 26, 1972, Ser. No. 128,708, Mar. 29, 1971, which is a continuation-in-part of abandoned application Ser. No. 1,379, Jan. 8, 1970. Application for reissue Aug. 29, 1973, Ser. No. 392,670

Int. Cl. A47f *1/00*

U.S. Cl. 312—71 **16 Claims**



1. A self-leveling dispensing apparatus, comprising

a. a frame,

b. an elevator supported for vertical movement,

c. a lever mounted on the frame for pivotal movement about an axis at one end, said lever having a curved surface,

d. a spring connected at one end to the frame and at the other end through connection means to an intermediate portion of the lever,

e. a first elongated flexible element connecting the other end of the lever to the elevator,

f. said connecting means providing for adjusting the point of connection of the spring to the said intermediate portion, said means including

g. a follower engaging and adjustably movable along the surface of said lever, and

h. said follower connected to the said spring by a second elongated flexible element.

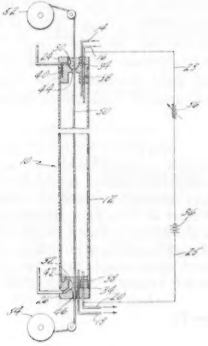
28,312
METHOD FOR PRODUCING BORON-CARBON FIBERS

Malcolm Basche, West Hartford, Conn., Roy Fanti, Springfield, Mass., Francis S. Galasso, Manchester, and Urban E. Kuntz, East Hartford, Conn., and Richard D. Schile, Hanover, N.H., assignors to United Aircraft Corporation, East Hartford, Conn.

Original No. 3,679,475, dated July 25, 1972, Ser. No. 811,072, Mar. 27, 1969. Application for reissue Oct. 5, 1972, Ser. No. 295,393

Int. Cl. B44d *1/14, 1/18;* **H01b** *1/00*

U.S. Cl. 117—216 **4 Claims**



1. A method for continuously depositing node-free amorphour boron to uniform thicknesses greater than 0.6 mil on a moving resistively heated carbon wire as it is drawn through a series of reactors comprising the steps of:

maintaining the carbon wire in the first reactor at a temperature of 1600°–2100° C.;

exposing the carbon wire while at said temperature in at least one reactor to a gaseous stream consisting essentially of a carbon-containing gas admixed with a diluent gas to effect deposition of pyrolytic graphite on the carbon wire;

maintaining the graphite-coated carbon wire in a subsequent reactor at a temperature of 700°–1400° C., and

exposing the wire in said subsequent reactor to a gaseous stream of a boron halide admixed with hydrogen to effect deposition of elemental boron thereon;

said deposit of pyrolytic graphite being disposed to prevent fracture of the carbon wire by the boron.

28,313
CARBON WATER FILTER

Ernest W. Hostetter, Lincoln, Iowa, assignor to Lincoln Water Clinic, Conrad, Iowa

Original No. 3,612,279, dated Oct. 12, 1971, Ser. No. 878,693, Nov. 21, 1969. Application for reissue Oct. 11, 1973, Ser. No. 405,859

Int. Cl. B01d *29/24*

U.S. Cl. 210—170 **15 Claims**

7. A filter comprising:

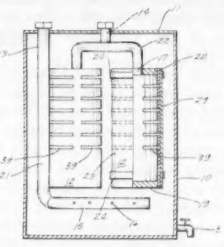
a tank;

inlet means for delivering liquid to said tank;

a filter element disposed in said tank including:

a chamber formed by a cylinder having openings therein,

a filter cloth disposed around said cylinder and covering said openings, said filter cloth being secured tightly at each end thereof and round the cylinder, said filter cloth being precoated with a mixture of asbestos fibers, powdered activated carbon and diatomaceous



each filter material; and

outlet means for delivering liquid from said chamber to the outside of said tank.

28,314
HIGH MOLECULAR WEIGHT AROMATIC POLYAMIDES HAVING AN AFFINITY FOR BASIC DYES

Gerhard Dieter Wolf, Dormagen, Günter Blankenstein, Stommeln, and Günther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

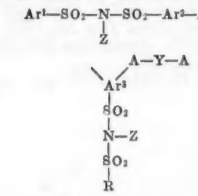
No Drawing. Original No. 3,676,525, dated July 11, 1972, Ser. No. 132,170, Apr. 7, 1971. Application for reissue Jan. 15, 1974, Ser. No. 407,394

Claims priority, application Germany, Apr. 13, 1970, P 20 17 509.1

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 TW **3 Claims**

1. A polyamide composition of matter that can be dyed with basic dyestuffs comprising a conventional high molecular weight aromatic fiber forming polyamide, containing repeating carbonamide groups as an integral part of the polymeric chain separated by a member selected from the group consisting of aromatic and aromatic heterocyclic moieties and from 3 to 30 percent by weight, based on the composition as a whole of a polyamide which comprises from 30 to 100 mol. percent of disulfoneimide segments of the formula:



wherein each symbol

A represents a group of the formula —CONH— or —NHCO—,

Z represents a hydrogen or alkali metal atom,

R represents a C_1 to C_4 alkyl radical or an aromatic, alkyl-substituted aromatic or halogen-substituted aromatic radical,

Ar^1 and Ar^2, which can be the same or different, each represents a bivalent aromatic, alkyl-substituted aromatic or halogendisubstituted aromatic radical,

Ar^3 represents a trivalent aromatic, alkyl-substituted aromatic or halogen-substituted aromatic radical, and

Y represents a divalent aromatic radical

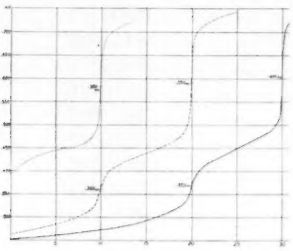
and from 0 to 70 mol percent of said conventional aromatic polyamide segments.

28,315

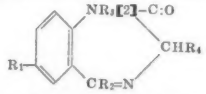
1,4-BENZODIAZEPINE - 2-ONES HAVING A CARBOXYLIC ACID ESTER OR AMIDE GROUP IN THE 3-POSITION

Josef Schmitt, deceased, late of Val- de-Marne, L'Hayles-Roses, France, by Marcelle Armande Georgette Schmitt, nee Lecocq, administratrix, Val-de-Marne, L'Hay-les Roses, France, assignor to Etablissements Clin-Byla, Paris, France

Original No. 3,516,988, dated June 23, 1970, Ser. No. 706,713, Feb. 19, 1968, which is a continuation of abandoned application Ser. No. 463,613, June 14, 1965. Application for reissue Mar. 8, 1972, Ser. No. 232,985
Claims priority, application France, June 15, 1964, 978,360; Apr. 12, 1965, 12,886
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **21 Claims**



1. A benzodiazepine having the formula



in which R_1 is a hydrogen or halogen atom or a trifluoromethyl, lower alkyl, lower alkoxy, nitro or amino group R_2 is a furyl, a thienyl, cyclohexyl, lower alkyl or a phenyl group which may be substituted by a halogen atom or by a trifluoromethyl, nitro, lower alkoxy or lower alkyl group, and R_3 is a hydrogen atom or a lower alkyl group, and R_4 is a lower carbalkoxy, carbamoyl, a N-loweralkylcarbamoyl, a N,N-diloweralkylcarbamoyl, a N-(diloweralkylaminoalkyl) carbamoyl, a group having the formula —COOC at in which Cat is a cation of an alkali metal or a semication of an alkaline earth metal.

28,316

ENTRAPMENT COMPOSITIONS AND PROCESSES

Gilbert S. Banker, West Lafayette, Ind., and Harris Goodman, Congers, N.Y., assignors to Purdue Research Foundation

No Drawing. Original No. 3,629,392, dated Dec. 21, 1971, Ser. No. 850,663, Aug. 15, 1969, which is a continuation-in-part of abandoned application Ser. No. 757,143, Sept. 3, 1968. Application for reissue Sept. 12, 1973, Ser. No. 396,968
Int. Cl. A61k *27/12*
U.S. Cl. 424—22 **16 Claims**

1. A method for the preparation of a pharmaceutical composition which comprises the steps of:

(a) providing an aqueous latex of dispersed particles of at least one physiologically harmless member selected from the group consisting of polymers having acidic functionality, polymers having basic functionality, and polymers having both acidic and basic functionality, said selected member being hydratable in the gastro-intestinal tract, said polymer being a pre-formed product of emulsion polymerization;

(b) [providing a dispersion of] *intermixing said latex* and a pharmaceutically active drug, said drug [being at least partially soluble in the dispersing medium and] having functionality reactive with functionality of said polymer with the priviso that if the polymer contains only acidic groups, the drug must contain basic groups and if the polymer contains only basic groups, the drug must contain acidic groups [, said dispersing medium being compatible with said aqueous latex; (c) intermixing said latex and said drug dispersion] to effect absorption of said drug to said polymer particles;

[(d)] (*c*) separating the particulate sorption product of step [(c)] and

[(e)] (*d*) formulating said sorption product into an oral dose form.

PATENTS

GRANTED JANUARY 21, 1975

ERRATA

For CLASS	See PATENT NO.
208–111	3,861,005
128–068	3,861,364
137–085	3,861,453
206–216	3,861,556
075–060	3,861,888
051–295	3,861,892
208–108	3,862,108
360–125	3,862,115
252–470	3,862,207
423–447	3,862,334
423–575	3,862,335

PATENTS

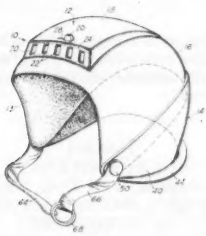
GRANTED JANUARY 21, 1975

GENERAL AND MECHANICAL

3,860,966
SAFETY HELMET

Clarence Eugene Brown, 211 Watson Blvd., Centerville, 31093, and William A. Stephens, 2937 Cristline Dr., Macon, 31204, both of Ga.

Filed Mar. 19, 1973, Ser. No. 342,416
Int. Cl. A42b *1/08*
U.S. Cl. 2—3 R 13 Claims



1. A safety helmet comprising:

a first semi-spherical helmet section adapted to cover the top portion of the wearer's head;

a second semi-spherical helmet section adapted to cover the lower back portion of the wearer's head, said first section being nested within said second section with the lower edge of said second section forming the lower rear edge of said helmet and the upper edge of said second section being engaged on the lower portion of said first section, and pivot means for pivotally connecting said second section to said first section about an axis coinciding with a central axis of the first and second sections whereby the second section is slidable over a semi-spherical surface of said first section;

means for biasing said second section downwardly to a position covering the lower rear portion of the wearer's head, said second section, in response to a high impact accident causing whip-lash of the wearer's head, pivoting upwardly in sliding engagement with said first section to minimize injury to the neck of the wearer; and

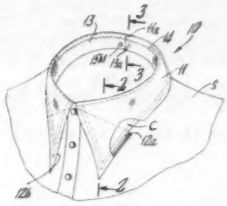
stop means interacting between said first and second sections to limit pivotal motion between said sections such that the lower edge of said second section cannot reach the position of the lower edge of said first section, said lower edge of the second section being in the form of an impact-absorbing flange to prevent injury to the wearer.

3,860,967
COLLAR AND SHIRT COLLAR PROTECTOR

George P. Tedesco, 172 Meadbrook Rd., Garden City, N.Y. 11520

Filed Nov. 21, 1973, Ser. No. 417,769
Int. Cl. A41b *3/18*
U.S. Cl. 2—129 8 Claims

1. A collar comprising a first portion having the appearance of a collar and fitting over-and concealing a shirt collar having point ends and a second portion in folded relationship to said first portion and fitting between the shirt collar and the neck of the wearer, further comprising a pair of pockets formed at the underside of said first member for receiving said point ends of said shirt collar, and means to adjust the neck size of said collar comprising said collar being formed with opposed ends, each of said ends being in folded relationship, and means to releasably secure said opposed ends in overlapping relation-

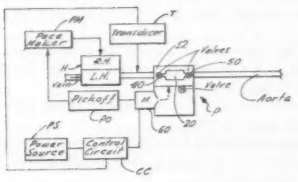


ship, whereby said point ends of said shirt collar remain within said pockets with adjustment of the neck size of the collar.

3,860,968
COMPACT, IMPLANTABLE APPARATUS FOR PUMPING BLOOD TO SUSTAIN BLOOD CIRCULATION IN A LIVING BODY

Max Shapiro, 1728 Monticello Dr., Beverly Hills, Calif.

Filed Nov. 20, 1969, Ser. No. 878,341
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 9 Claims



1. In an artificial heart serving as a complete heart substitute, or a bypass, or a relief, the combination comprising:

first means defining a pressure chamber filled with gas, having aligned openings repectively on opposite sides, further including a piston movable transverse to the direction of alignment of the openings, for increasing volume, and decreasing pressure, and vice versa, in the chamber;

a deformable bladder suspended in the chamber to be surrounded by the gas in the chamber and having aligned inlet and outlet tubes, respectively placed in the openings, thereby, closing the chamber as to these openings, the inlet and outlet tubes provided for respective connection to venous and/or arterial blood vessels;

second means connected to the first means, and serving as piston chamber extension on the side of the piston opposite the side thereof facing the pressure chamber, the second means defining a second chamber filled with the same gas as the first chamber, there being duct defining means to cause communication between first and second chambers in a retracted position of the piston relative to the first chamber;

motor means supported by the second means and providing a rotary output;

third means linking the rotary output of the motor means to the piston for imparting upon the piston a reciprocating motion; and

valve means for opening and closing the flow path in the inlet and outlet tubes anticyclically and in synchronism with the pressure change in the pressure chamber and the bladder as controlled by the piston.

3,860,969

RETROMAMMARY PROSTHESIS

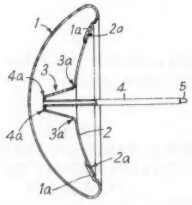
Henri G. Arion, 9 Boulevard de Strasbourg, Toulon, France

Continuation of Ser. No. 304,217, Nov. 6, 1972, abandoned, and a continuation-in-part of Ser. No. 127,561, March 24, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 430,064

Claims priority, application France, June 26, 1970, 70.23901

Int. Cl. A61f *1/24; A41c 3/10*

U.S. Cl. 3—36 **1 Claim**



1. A retromammary prosthesis comprising, a front wall preformed as a portion of a hollow sphere with its rim portion curved inwardly from the outer periphery thereof and into the concavity thereof and terminating therein in an annular flange,

a circular rear wall of smaller diameter than said rim secured at its periphery to the annular flange and preformed to curve inwardly,

the central portion of the rear wall being provided with a hollow protuberance,

an elongated flexible filler tube of smaller width than said protuberance, secured to said protuberance and opening into said concavity,

said hollow protuberance extending into said concavity to provide a predetermined volume of hollow space,

said filler tube being of a length to extend from the prosthesis when located between the chest muscle and mammary gland of a wearer, to a location exterior of the breast,

the hollow space provided by the protuberance being sufficient to house the entire flexible filler tube in folded condition.

3,860,970

DETACHABLE DEVICE FOR PARTIALLY SUPPORTING A SMALL CHILD ON A CONVENTIONAL TOILET SEAT

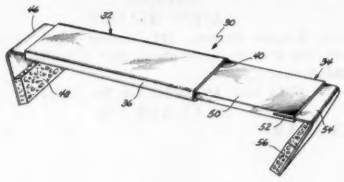
Elizabeth B. Thompson, 4337 Ewing Ave. S., Minneapolis, Minn. 55410

Filed Mar. 6, 1973, Ser. No. 338,630

Int. Cl. A47k *17/00*

U.S. Cl. 4—1 **9 Claims**

1. A detachable device for partially supporting a small child on a conventional toilet seat or toilet bowl comprising a first elongated member having a flat upper surface and a rectangular passage extending inwardly from one end to a location near the other end thereof, a second elongated member having a flat upper surface and a cross section corresponding substantially to that of said passage so that one end of said second member can be telescopically received within said passage, and respective means at the said other ends of said elongated member for engaging the opposite sides of a conventional toilet seat or the underlying toilet bowl to maintain said first and second elongated members at substantially the same elevation as the upper surface of said seat or the upper surface of the toilet bowl, said engaging means including a resilient clip at each outer end of said elongated members, whereby said members can be relatively extended from their telescopically received relation to a length sufficient to span the opening of the toilet seat or bowl for the partial support of a child at said substantially same elevation as the said upper surfaces of said seat or bowl.



3,860,971

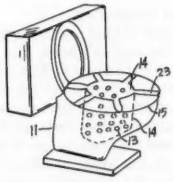
TOILET DIAPER NET

Jan Dirks, 1127 Figueroa, Walla Walla, Wash. 99362

Filed July 2, 1973, Ser. No. 375,318

Int. Cl. A47k *17/00*

U.S. Cl. 4—1 **3 Claims**



1. A device of two-part construction for the rinsing of soiled diapers inside a toilet bowl, comprising a net holder formed in the general shape of a toilet seat that is mountable on the rim of a toilet bowl, and a perforated disposable diaper net that is attachable to the net holder so as to lie within the toilet bowl, when the net holder is mounted on the toilet bowl rim,

said net holder and said diaper net being each fitted with releasable attachment means for joining the net to the net holder,

said net formed in the shape of a perforated bag closed at one end and terminating in a generally circular open rim at the other end, with the bag being of a size to reach below the water level in a toilet bowl when the open rim of the bag is attached to the net holder.

3,860,972

TOILET FLUSHING ASSEMBLY

Albert D. Costello, 303 E. Eagle St., East Boston, Mass. 02128

Filed July 9, 1973, Ser. No. 377,260

Int. Cl. E03d *5/02, 5/09, 1/20*

U.S. Cl. 4—67 R **7 Claims**

1. A flushing assembly for toilet bowls and the like comprising

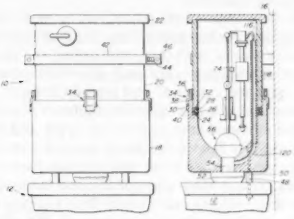
a. a tank mountable upright to said bowl,

b. said tank being formed with a vertically extending inner chamber of arcuate horizontal cross-section,

c. at least the lower portions of the inner front, side and rear walls of said chamber defining a funnel and formed with a drain opening at the base thereof communicating with said bowl,

d. conduit means connecting said tank to a source of flushing liquid,

e. valve means adapted to release liquid from said tank through said opening upon actuation thereof, and,



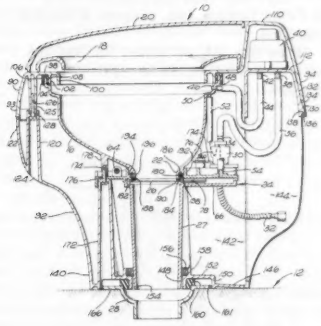
f. refill means connected to said conduit means for automatically refilling said tank with liquid after actuation of said valve means.

3,860,973

TOILET CONSTRUCTION

Tim Minoru Uyeda, South San Gabriel, and David Edward Workman, Orange, both of Calif., assignors to International Telephone and Telegraph Corp., New York, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,877
Int. Cl. E03d *5/012, 11/00*
U.S. Cl. 4—80 **12 Claims**



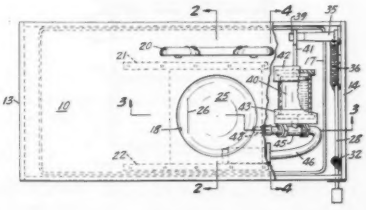
1. A toilet construction comprising:
- a hollow base structure adapted to be mounted on a flat support over a drain opening in said support, said base structure having an open bottom;
- a bowl mounted within said base structure having a discharge outlet;
- flush valve means adjacent to said discharge outlet for controlling the flow of water therethrough;
- conduit means extending downwardly from said flush valve means to said open bottom of said base structure for connection to said drain opening;
- water valve means within said base structure but outside said bowl for controlling the flow of water from a water source to said bowl;
- a seat for said bowl;
- said base structure being divided into separate hollow upper and lower sections, said upper section carrying said seat and having its perimeter overlying the perimeter of said lower section;
- means releasably securing said upper section to said lower section from outside said lower section;
- means connecting said bowl to said lower section;
- said upper section being disconnected from said bowl whereby said upper section is separable from said bowl; and
- said lower section being adapted to be fixedly mounted to said support, whereby said upper section may be removed from said lower section to obtain access to the interior of said lower section without removing the lower section from said support.

3,860,974

RECIRCULATING FLUSH TOILET

Jonathan W. De Vries, Inver Grove Heights; Phillip R. Juaire, Brooklyn Center, and David S. Morse, Bloomington, all of Minn., assignors to Satellite Industries, Inc., Minneapolis, Minn.

Filed July 5, 1973, Ser. No. 376,398
Int. Cl. A47k *11/02;* **A61l** *11/00*
U.S. Cl. 4—115 **9 Claims**



1. A chemical flush toilet comprising
- a rectangular tank having an open top which tank is adapted to receive a supply of fluid,
- a cover supported across said open top, said cover having an access opening and a pair of rails supported inside the cover and disposed one on each side of said opening,
- a toilet bowl supported on said rails and movable thereon between a first position aligned with said opening and a second position under said cover to one side of said opening,
- support means slidably supporting pump means inside said cover adjacent to said opening, said pump means having discharge nozzle means positioned in said bowl when the same is in the first position aligned with said opening,
- operable means adjacent one end of said tank for operating said pump means, said operable means comprising bar means pivotally mounted adjacent said one end of said tank, an operator connected to said pump means, and spring means connecting said bar means to said operator for transferring operating force therebetween for pumping fluid from said pump means through said nozzle means to flush said bowl, and
- return means for said bar and pump means to charge said pump means.

3,860,975

BATHTUB CLOSURE MEANS HAVING VERTIFICALLY SLIDABLE PANELS AND METHOD OF ASSEMBLY

Abraham Grossman, 9339 Rhea Ave., Northridge, Calif.

Filed May 22, 1973, Ser. No. 362,743
Int. Cl. E06b *7/02*
U.S. Cl. 4—149 **12 Claims**

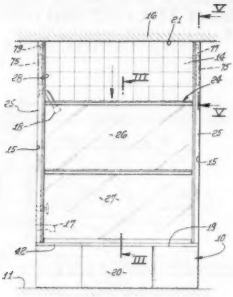
1. In a vertical slidable closure means for an opening to a bathtub, the bottom of the opening being defined by a wall of the bathtub, the combination of:
- a sill member on the bathtub wall;
- opposed spaced apart track housing means extending upwardly from opposite ends of said sill member and lying in the vertical plane of said opening;
- each housing means including a U section channel member having a longitudinal opening defined by channel edges and adapted to be secured to a wall of the opening,

and a guide member slidably adjustably positionable in said longitudinal opening of the channel member,

said guide member having vertical parallel guide slots adjacent said channel edges and facing said bathtub opening, and having vertical guide channels located within said channel member and in alignment with corresponding guide slots,

a pair of horizontally extending vertically disposed panels having end portions slidable in respective guide slots in said guide member,

one of said panels having a bottom edge engagable in sealing relation with said tub wall,



the other said panels having a bottom horizontal edge portion overlapping the inboard surface of the upper horizontal edge portion of the lower panel when said panels are positioned to close said opening;

said panels when closing said opening providing a panel receiving space above the uppermost panel;

both of said panels being upwardly movable into overlying relationship with each other and into said receiving space whereby access therebelow is provided to said bathtub;

and means movable in said vertical guide channels and connected to said panel end portions for selectively positioning said panels in said opening.

3,860,976

BATHING FLOAT DEVICE

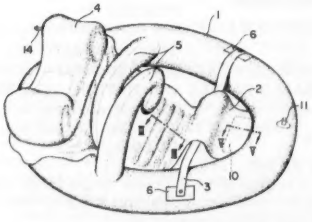
Shiko Suyama, Tokyo, Japan, assignor to Fuji Original Kogyo, Co., Ltd., Tokyo, Japan

Filed July 12, 1973, Ser. No. 378,725

Claims priority, application Japan, July 12, 1972, 47-082254

Int. Cl. A47k *3/12, 3/164*

U.S. Cl. 4—185 B **3 Claims**



1. A bathing float device for supporting a baby, said device comprising:

an annular float including top and bottom surfaces, upper and lower ends, and opposed sides for floating on the water and supporting a baby lying on its back and facing upwardly, said float being provided with a horizontal partition wall dividing the float into upper and lower chambers formed by said top and bottom surfaces;

a hollow pillow provided at the upper end of the annular float facing upwardly;

flexible hollow arms provided on said annular float at respective sides, below said pillow, fixed at one end to said respective side of said float and having the free ends of the arms extending toward each other and crossing themselves, over the center of said annular float;

a back sheet being longer than the diameter of said annular float and mounted at its ends to the upper and lower ends of said annular float respectively in such a manner as to hang in arcuate state from said annular float to support the back of said baby when positioned thereon;

a flexible strip bridging said annular float near the lower end thereof, overlying the top surface of the sides of the annular float and underlying the back sheet, and extending across the back and being fixed to respective sides of said annular float;

a pair of strings bridging said float to the bottom of the back sheet and along the side edges of the back sheet and being fixed at one end to the bottom surface of the annular float near its upper end in each case and being fixed to said flexible strip at the opposite end thereof, and

means for controlling the inflation and deflation of the upper and lower chambers, said hollow pillow and said hollow arms.

3,860,977

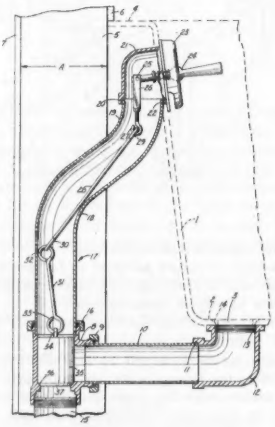
OFFSET TRIP LEVER FITTING

William E. Politz, Delphia, Ind., assignor to Stephen A. Young, Monticello, Ind.

Filed Nov. 13, 1972, Ser. No. 306,355

Int. Cl. E03d *1/232*

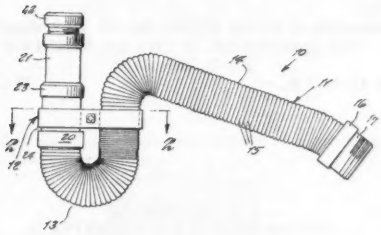
U.S. Cl. 4—199 **2 Claims**



1. In bath drain construction of the class described, in combination, a tub having a drain outlet, a waste arm having a waste shoe at one end positioned at the drain outlet of the tub, the other end of the arm connected to a drain tee having a seat therein, said tee being positioned within the outline of wall framing members, and having a drain end connected to a drain system, an overflow outlet in the tub, an overflow head at said outlet, said head being outside of such wall framing members, and a sinuous rigid pipe connection from the overflow head to the drain tee to convey liquid from the head to the tee, a drain shut off operating mechanism extending from the head to the tee in the sinuous connection, and including a plug to coact with said seat in the tee to prevent liquid outflow from the drain arm, lever means at the overflow head, and rigid, joined

elements heading from the lever means to the plug, to raise and lower the same with respect to the seat.

3,860,978
TIME SAVING DRAIN ASSEMBLY FOR SINKS, BATHTUBS, ETC.
Paul H. Wirth, 1152 Lakeland Ave., Bohemia, N.Y. 11716
Filed May 18, 1973, Ser. No. 361,505
Int. Cl. E03c *1/284*
U.S. Cl. 4—207 **3 Claims**



1. A time saving drain assembly for sinks, bathtubs, or the like, which comprises:

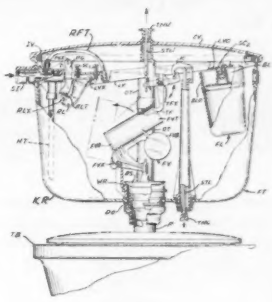
a. a continuous flexible length of hose designed with a bellows type construction so that said hose may be stretched, compressed and reshaped, said hose having openings only at its two ends, being adaptable to be flexed into a plumbing trap configuration, and which has been designed not to tear and crush when bent to form a curve of diameter slightly over twice the diameter of said hose;

b. means for connecting said two ends of said hose to plumbing so that material being transported through said hose can not escape; and

c. means for releasably clamping said hose to the plumbing to form a portion of said flexible hose into a U-shaped section and maintain said U-shaped section in a rigid upright position wherein by removing said clamp and upsetting the U-shaped section of said trap configuration while manipulating said hose a blockage in the hose can be cleared without allowing material being transported through said hose to escape.

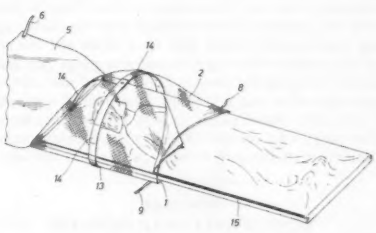
3,860,979
FLUSH TANK APPARATUS
Sherwood L. Young, Monson, Mass., assignor to American Standard Inc., New York, N.Y.
Continuation of Ser. Nos. 754,669, Aug. 22, 1968, Pat. No. 3,533,437, and Ser. No. 54,065, June 1, 1970, Pat. No. 3,654,637. This application Feb. 3, 1972, Ser. No. 223,271
Int. Cl. E03d *5/02*
U.S. Cl. 4—249 **6 Claims**

1. Operator flushing mechanism for coupling and decoupling two parts to iniate a flushing action in a flush tank for a toilet bowl, both parts being provided with apertures which are to be aligned with each other, comprising a rod which has substantially uniform cross-section and is of sufficient length so as to be fully insertable through the apertures of said parts when they are to be coupled together and to constitute the axis of rotation of either or both of said parts, said rod having an expanded head at one end thereof to limit the extent to which said rod may be inserted through the apertures of said parts, a bar of hardened material which is deflectable, and means to hold one end of said bar in a fixed position so that a portion of said bar will overhang the head of said rod, whereby the rod may be inserted through the apertures of both parts to couple said parts together only by the deflection of the free end of said bar or removed from said apertures of



said parts to decouple said parts only by the deflection of the free end of said bar.

3,860,980
ACCESSORY FOR USE WITH A SLEEPING BAG
Mary Anne Ebert, Box 2264, SHSU Station, Huntsville, Tex. 77340
Filed May 2, 1973, Ser. No. 356,463
Int. Cl. A47g *9/00, 9/08*
U.S. Cl. 5—343 **12 Claims**



1. An accessory article for use in combination with a sleeping bag to provide the occupant thereof with protection from insects and weather, comprising:

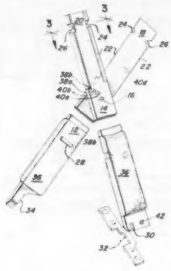
a. a self supporting frame assembly consisting of at least three generally C shaped elements, each pivotally connected together on each end to the corresponding ends of the other frame elements to form two pivot points with the pivot axes being essentially in line, the second and subsequent of such elements being identically shaped but sufficiently smaller then the preceeding frame element so that they will fit one inside the other when folded;

b. a flat, tubular body, the bottom of said tubular body being constructed of a flexible, water impermeable material, and the top panel being constructed of an air permeable, porous material, the size of said pores being smaller than the size of the insects from which protection is desired, said tubular body being closed on two sides and on one end, and open on one end, the inside dimension of said tubular body being greater than the sleeping bag;

c. a weather flap constructed of flexible, water-proof material, attached on at least one end to the closed end of the tubular body; and

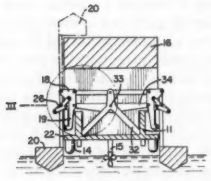
d. connecting means on the weather flap on the tubular body for connecting same when protection from the weather is desired.

3,860,981
ELECTRICAL INSTALLATION TOOL
John W. Mayer, 1508 Blackhawk Dr., Schaumburg, Ill. 60172
Filed Aug. 10, 1972, Ser. No. 279,716
Int. Cl. H02q *1/12*
U.S. Cl. 7—5.3 **8 Claims**



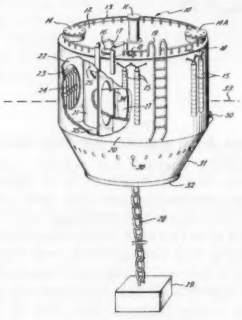
1. An electrician's tool comprising two rigid elongated work members each having a handle element and a work element, means mounting said members for pivotal movement relative to each other whereby movement of the handle elements toward each other moves the work elements from an open position to a first closed position into working association with each other, each of said work elements having inner and outer opposite edges comprising knife blade means each including aligned wire receiving notch means, the notch means on said inner edges forming a first wire gauge gap with said work elements in said first closed position, said work elements being pivotal away from said first closed position through the open position to a second closed position with the outer edges in facing working association with each other and the aligned outer edge notches forming a second wire gauge gap, and stop means for stopping the pivotal movement of said inner edges toward each other and said outer edges toward each other in said respective closed positions with said notches forming a precise gauge wire receiver whereby the bladed notches cut the insulation on the wire without cutting into the wire.

3,860,982
CONVERTIBLE TRAILER/BOATS
Rollin Douglas Rumsey, 148 Summer St., Buffalo, N.Y. 14222
Filed May 17, 1971, Ser. No. 143,835
Int. Cl. B60f *3/00*
U.S. Cl. 9—1 T **11 Claims**



1. An amphibious camping vehicle comprising: a frame, a pair of elongated pontoon floats, means mounting said floats relative to said frame for pivotal movement about parallel axes extending longitudinally of said frame between an outer extended position and an inner collapsed position, wheel means carried by said floats for engagement with a ground surface in said inner collapsed position of said floats, means resiliently suspending said floats from said frame, and means for pivoting said floats between said extended and collapsed positions including toggle linkages operatively connected to said suspension means, said toggle linkages being connected to said floats, and means for actuating said toggle linkages to swing said floats between said extended and collapsed positions, and means for transmitting the forward weight of said frame to said floats in a manner distributing the weight substantially equally to said floats while allowing said floats to pitch differentially.

3,860,983
CONTROLLABLY SUBMERSIBLE BUOY
Werner F. Furth, Houston, and Paul R. Benson, Spring, both of Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.
Continuation of Ser. No. 873,038, Oct. 31, 1969, abandoned. This application Oct. 12, 1971, Ser. No. 188,473
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 R **28 Claims**

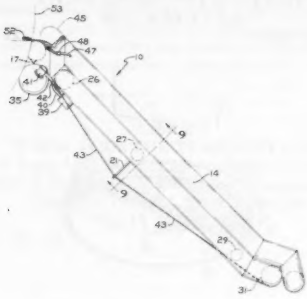


1. A buoy, comprising a hollow body adapted to receive water to cause it to descend to a desired level therein, check valve means for venting such water from the body, a source of compressed gas within the body, means for releasing gas from said source into said body to force water from said body through said check valve means and thereby cause said body to rise to the surface, and means adapted to be located on said body above the normal water line of said buoy when surfaced for automatically closing said gas releasing means when said body reaches said surface.

3,860,984
INFLATABLE LIFE RAFT ESCAPE SLIDE
John M. Fisher, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed June 25, 1973, Ser. No. 373,119
Int. Cl. B63c *9/04*; **B64d** *25/14*
U.S. Cl. 9—11 A **10 Claims**

7. An escape life raft slide assembly comprising an elongated flexible wall fluid-distensible tubular sectioned structure; said slide assembly having a slideway surface thereon for supporting passengers evacuating said aircraft, truss means secured to the underneath portion of said slide assembly for supporting said raft in its distensible condition; a distensible pusher tube connected to one end of said tubular sectioned structure for rapidly deploying said slide assembly; pressurized gas means mounted adjacent to said pusher tube for pressurizing said pusher tube and said tubular sectioned structure; aspirator means interconnecting said pusher tube and said pressurized gas means; one way valves interconnecting said pusher tube and said tubular sectioned structure to permit

pressurization of said tubular sectioned structure when said pusher tube is pressurized, and said aspirator means operative



to deflate said pusher tube upon exhaust of all of the fluid from said pressurized source.

3,860,985

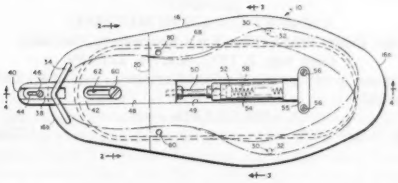
ADAPTER FOR USE IN SHOE MAKING

Bertram A. Von Schoppe, Marlboro, Mass., assignor to Compo Industries, Inc., Waltham, Mass.

Filed June 11, 1973, Ser. No. 368,648

Int. Cl. A43d *25/00*

U.S. Cl. 12—17 R **29 Claims**



16. Apparatus comprising a brush supported for movement in horizontal and vertical planes about, respectively, vertical and horizontal axes, a stationary support situated below the brush, said support having a flat horizontal surface, an adapter for clampingly receiving a unit sole, mounted on the flat surface of the support, means for rotating the adapter on the support below the brush a complete turn comprising a continuous flange on the adapter and a pair of feed rolls on the support with which the flange is engageable when mounted on the support, and means associated with the brush to cause it to travel along the marginal edge of the unit sole while the adapter is being rotated comprising a guide roll rotatable about a vertical axis, and means supporting the guide roll adjacent the brush in a position for engagement with the edge face of the unit sole.

3,860,986

SHOE TREE WITH SELECTIVELY ADJUSTABLE INSERTS

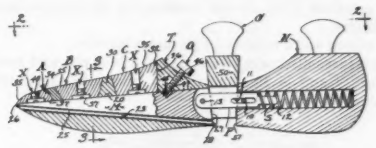
Alexander K. Stanton Ballard, 621 Midvale Ave., Los Angeles, Calif. 90024

Filed Mar. 15, 1973, Ser. No. 341,406

Int. Cl. A43d *5/00*

U.S. Cl. 12—115.2 **18 Claims**

1. A shoe tree having a formed portion with an exterior contour complementary to and to be fitted to the interior contour of a shoe, and including; a chamber within the said formed portion and opening at its inner end, a retractile mandrel entering said inner end opening of the chamber and with an inclined surface thereon and shiftable along a longitudinally disposed line of movement to a fully protracted position into said chamber, protracting means moving the mandrel into the chamber, and a laterally displaceable insert having an exterior contour form normally continuing from the surround-



ing exterior contour of the shoe tree, said insert being engageable with the inclined surface of the mandrel when fully protracted into position for predetermined lateral displacement of the insert.

3,860,987

DEVICE FOR APPLYING A PROTECTIVE COATING TO AN IMMERGED SURFACE

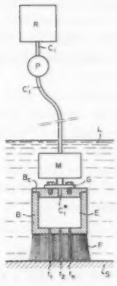
Peter Bolli, and Jean-Jacques Asper, both of Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed May 8, 1973, Ser. No. 358,343

Claims priority, application Switzerland, May 10, 1972, 7009/72

Int. Cl. A46b *13/04*

U.S. Cl. 15—29 **6 Claims**



1. A device for applying a protective coating to an underwater surface, comprising:

at least one rotary brush having a body centered on an axis, said body being provided with an inner chamber;

a set of relatively hard inner bristles and a set of relatively soft outer bristles on said body centered on said axis;

a source of coating composition under pressure communicating with said chamber;

at least one flexible outlet tube extending from said chamber to said set of inner bristles and terminating just short of the tips thereof; and

drive means for rotating both sets of bristles about said axis.

3,860,988

MOBILE HOME WASHING APPARATUS

Clifford E. Barton, Lot 67, Battle Field Trailer Pk., Franklin, Tenn. 37064

Filed Nov. 8, 1973, Ser. No. 413,930

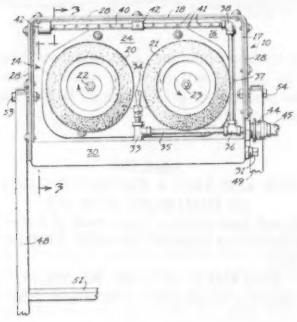
Int. Cl. A47l *7/02*; **A46b** *13/02*

U.S. Cl. 15—29 **6 Claims**

1. Apparatus for washing mobile homes comprising:

a. an elongated housing having an elongated top edge, and elongated bottom edge, an interior face and an exterior face,

b. a pair of rotary brushes mounted on said interior face for rotation about longitudinally spaced, parallel axes,
c. a motor mounted on said housing and operativly connected to said rotary brushes for driving said brushes in opposite rotary directions,
d. a reservoir fixed on said housing for receiving a liquid cleanser,
e. a mixing valve connected to said reservoir,
f. a cleanser discharge outlet directed between said rotary brushes and in fluid communication with said mixing valve,



g. a cleanser water conduit coupled to said mixing valve for introducing water into said mixing valve for mixing with the cleanser from said reservoir,
h. an elongated rinse head fixed to said interior face and extending substantially the length of said housing adjacent to said top edge,
i. a water inlet coupling on said housing communicating with said cleanser conduit and said rinse head and adapted to be coupled to a flexible water supply conduit,
j. means for supplying power to said motor,
k. an elongated handle connected to said housing for manual movement of said apparatus over the vertical wall surface of a mobile home.

3,860,989

MOUNTINGS FOR ROTARY FLOOR TREATING ELEMENTS

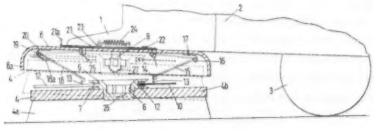
Henry William Johnston, St. Albans, England, assignor to R. G. Dixon & Company Limited, Middlesex, England

Filed Aug. 13, 1973, Ser. No. 387,676

Claims priority, application Great Britain, Aug. 14, 1972, 37887/72

Int. Cl. A47l *11/16*

U.S. Cl. 15—49 R **10 Claims**



1. A mounting arrangement for a rotary floor treating element, comprising a head unit carrying a driven shaft, means adjustably mounting a support plate on the head unit for movement between an operating position close to the head unit and a free position spaced from the head unit, and releasable latch means for holding the support plate in the operating position, the support plate having means to support rotary floor treating elements in engagement with the drive shaft when in the operating position and to release them from such engagement when in the free position.

3,860,990

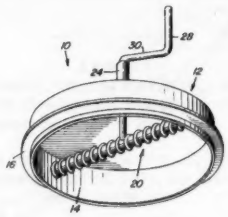
PIZZA SAUCE SPREADER

Daniel J. Petruzzi, 679 N. Manhattan Ct., Hazleton, Pa. 18201

Filed July 3, 1973, Ser. No. 376,173

Int. Cl. B05c *11/02*

U.S. Cl. 15—104 S **21 Claims**



1. An implement for uniformly distributing a viscous fluent material over a substantially circular surface, comprising an elongated member of a length substantially equal to the diameter of said circular surface, handle means operatively connected to said member for rotation thereof about a rotational axis centrally intersecting said circular surface perpendicular to a longitudinal axis extending through said member, and spiral means peripherally mounted by said elongated member for radially displacing the fluent material in response to rotation of the member about said rotational axis.

3,860,991

A STREET-CLEANING MACHINE

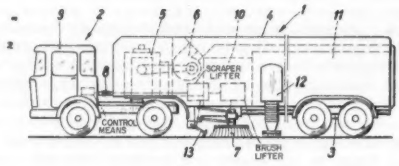
Gunter Heidt, 7981 Schlier/Kreis Ravensburg, Germany

Filed Aug. 2, 1972, Ser. No. 277,409

Claims priority, application Germany, Jan. 14, 1972, 2201602

Int. Cl. E01h *1/08*

U.S. Cl. 15—340 **1 Claim**



1. A street-cleaning machine comprising:
a self-propelled tractor;
a trailer pivotally connected to and detachable from said tractor for towing thereby, said trailer comprising:
an elongated vehicle body having at least one axle and wheels thereon adapted to be drawn along a road surface by said tractor,
scraper means on said body proximal to said trailer and adapted to scrape contaminants from a road surface,
rotating disk brushes mounted on said body and engageable with said road surface behind said scraper,
suction- nozzle means behind said brushes on said body for drawing contaminants, refuse and water into said body,
an exhaust blower in said body connection to said suction-nozzle means,
a prime mover connected to said blower means and said brushes for driving same, said prime mover being mounted in said body,
a garbage container in said body for receiving refuse drawn up through said suction-nozzle means, a water

tank in said body supply water for wetting the road surface, and

operating means on said body for selectively raising and lowering said scraper means and said brushes, and

control means operable from the said tractor and connected via a releasable coupling to said operating means for controlling the positions of said brushes and said scraper means from said tractor.

3,860,992

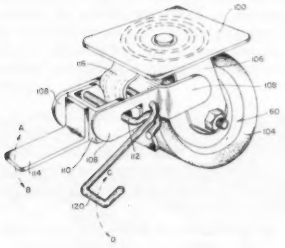
WHEEL LOCK FOR TRANSPORT CART

James R. Legg, Long Beach, Calif., assignor to Banner Metals Division of Intercole Automation, Inc., Compton, Calif.

Filed Feb. 19, 1974, Ser. No. 443,449

Int. Cl. B60b *33/00*

U.S. Cl. 16—35 2 Claims



1. In a swivel caster assembly which includes a horizontal swivel plate mounted for rotation about a vertical axis, a pair of spaced-apart bracket arms mounted on the underside of the plate and extending down from the plane of the plate, and a wheel rotatably mounted between said spaced-apart bracket arms; a wheel lock assembly comprising: a pair of spaced-apart radial bracket arms affixed to said first-named bracket arms and extending generally radially with respect to the wheel; a braking strip mounted on said swivel plate and extending down between said radial bracket arms adjacent the peripheral rim of said wheel; a transverse reversing rod extending between said radial bracket arms adjacent to said braking strip; a cam member keyed to said reversing rod and rotatable thereby between a braking position in which it forces the braking strip against the peripheral rim of the wheel, and a release position in which it enables the braking strip to disengage from the peripheral rim of the wheel; and a foot operated brake pedal attached to said cam member and extending outwardly beyond the ends of said radial bracket arms.

3,860,993

DOOR CONTROL DEVICE

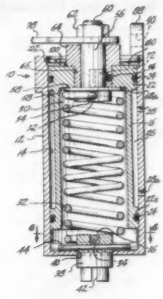
James E. Matuska, Bothell, Wash., assignor to Sealth Aero Marine, Seattle, Wash.

Filed Jan. 16, 1973, Ser. No. 324,242

Int. Cl. E05f *3/14*

U.S. Cl. 16—52 13 Claims

1. A door control device comprising: a housing having a cylindrical shaped interior; a rotor mounted in the housing the outside diameter of which approximates the inside diameter of the housing, the rotor having a hollow interior and at least one longitudinal recess extending inward from the outside surface; a viscous fluid between the rotor and the housing; a torsion spring located inside the rotor; means for adjustably fastening a first end of the spring to the housing; means for fastening the second end of the spring to a rotatable drive shaft; means for linking the drive shaft to a door; and means for engaging the



rotor to the drive shaft when the shaft rotates in one direction and for disengaging when the shaft counterrotates.

3,860,994

PUBLIC RENTAL LOCKER

Masaru Itoda; Yoshio Kinoshita, and Kazumi Yorisue, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo-ken, Japan

Filed Sept. 15, 1972, Ser. No. 289,276

Int. Cl. E05d *9/00*

U.S. Cl. 16—128 3 Claims

1. A rental locker system for aprizing a potential user that a locker compartment is available for use, comprising in combination:

a plurality of locker compartments defined by vertically spaced shelves each having a hinged door closing the compartment when abuting the shelves and providing access thereto when ajar;

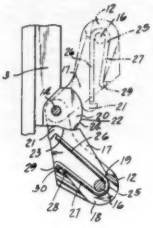
locking means provided for each of the locker compartment doors for lockably holding each door flush to the shelves in a closed state;

resiliently-urging means mounted between each door of said compartments and a shelf portion in the path of travel of the door for continuously maintaining each of the compartments doors at an ajar position in their respective said open state and signaling a prospective user of the locker system so it is promptly ascertained which respective one of the compartments is available for use by the prospective user.

3,860,995
LOCKING SPRING HINGE

Karl Lautenschlager, Jr., Reinheim, and Gerhard Lautenschlager, Wersau, both of Germany, assignors to Karl Lautenschlager KG Mobelbeschlagfabrik

Filed Apr. 19, 1973, Ser. No. 352,535
Claims priority, application Germany, Apr. 21, 1972, 2219616; Feb. 15, 1973, 2307365
Int. Cl. E05d *11/08*
U.S. Cl. 16—139 **14 Claims**



1. A locking spring hinge having means for fixed mounting on a wall adjacent an access opening in a piece of furniture, means for mounting to a door adapted to close the opening, and articulating lever arm structure pivotally connected to and between said means and operable to support the door and control movement of the door between open and closed positions relative to the opening, comprising:

an oscillatable rocking lever pivotally connected at one end to a lever arm of said lever arm structure and pivotally connected at an opposite end to one of said means;

a locking element carried by and movable with said rocking lever;

a locking element carried by said one means;

one of said locking elements being resiliently biased toward the other of said locking elements;

said other locking element having a glide surface along which said biased locking element rides and maintaining said one element against bias thrust effect in a closed door direction throughout a major extent of rocking oscillations of said rocking lever between the open door and closed door positions;

said other locking element having a locking shoulder surface leading from said glide surface and with which shoulder surface said biased locking element engages in the closed door position of said rocking lever for thereby maintaining the closed door position by resilient thrust of the biased locking element against said locking shoulder surface;

said other of said locking elements comprising a mounting ear rigid with said one of said means;

said rocking lever having a slot within which said ear is received;

pivot means connecting the rocking lever to said ear;

said ear having said glide and locking shoulder surfaces thereon in cam profile; and

said resiliently biased locking element being carried by said rocking lever within said slot.

3,860,996
STUFFING METHOD AND APPARATUS

Vytautas Kupcikevicius, and Joseph A. Nausedas, both of Chicago, Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 19, 1973, Ser. No. 325,211
Int. Cl. A22c *13/00*
U.S. Cl. 17—49 **3 Claims**

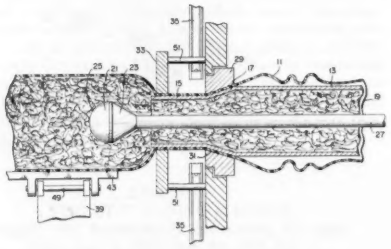
1. In apparatus for continually stuffing product into flexible packaging bags wherein the product is pressure fed into each bag sequentially through a stuffing horn disposed during stuffing into the bag through its open end and the bag filled to a preselected extent is closed at its neck and sealed, the improvement comprising, in combination,

a. a stuffing horn outlet having a peripheral dimension less than the peripheral dimension of the stuffed bag;

b. a truncated conical section disposed between and connecting the stuffing horn and the stuffing horn outlet;

c. an annulus disposed concentrically on said truncated conical section arranged to define a truncated conical passage through which the bag being stuffed advances in slipping movement from the stuffing horn towards the stuffing horn outlet;

d. product stoppering means disposed longitudinally concentrically in the stuffing horn, said product stoppering means having a first generally conical surface disposed in impinging relationship against product flow and a generally spherical surface disposed towards the direction of product flow, having a peripheral dimension not greater than the peripheral dimension of the stuffing horn outlet, reciprocally moveable between a first position in which



product stuffing flow proceeds through the stuffing horn, the stuffing horn outlet, and around the stoppering means into the bag and a second position in which product stuffing flow is stopped at the stuffing horn outlet;

e. means to move said stoppering means selectably between and into said first and said second positions;

f. bag restraining means disposed concentrically of the stuffing horn adjacent the stuffing horn outlet arranged to hold the bag being stuffed in slipping contact against the stuffing horn outlet periphery;

g. bracket means mounting the annulus, the bag restraining means, and a support for the bag being stuffed, and

h. motive means operably connected to and arranged and disposed to move said bracket means reciprocally between a first position in which an unfilled product-free interior adjacent the open end of a just filled bag is in communication with the outer periphery of the stuffing horn outlet and a second position in which said unfilled product-free interior adjacent the open end of a just filled bag is advanced into registration with said bag neck closure and sealing means clear of the stuffing horn outlet and the product stoppering means.

3,860,997
STRAP LOCKING DEVICE WITH QUICK RELEASE

Richard W. Van Riper, Jr., and Richard L. Harbison, both of Crawfordsville, Ind., assignors to Ingress Manufacturing Co., Inc., Crawfordsville, Ind.

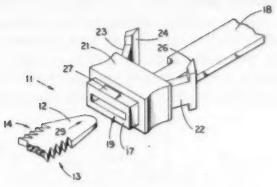
Filed Dec. 14, 1973, Ser. No. 424,862
Int. Cl. B65d *63/00*
U.S. Cl. 24—16 PB **18 Claims**

1. A quick-release strap locking device comprising:

a tab, attachable to a first strap end, having a first side which includes a notch;

a buckle, attachable to a second strap end, having a passageway and a resiliently attached first arm which has a

tooth, the tab being in the passageway and the first arm having a normal first position in which the tooth is exterior to the notch; and



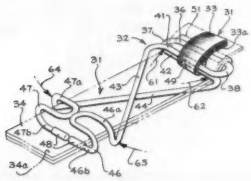
sleeve means for forcing the first arm into an engaged second position in which the tooth is within the notch whereby the tab is locked in the passageway and for alternatively allowing the first arm to assume its normal first position whereby the tab may be removed from the passageway.

3,860,998

STRAP AND BUCKLE ASSEMBLY

Gerald L. Schnurmacher, 319 Bonita Ave., Piedmont, Calif. 94611

Filed Jan. 10, 1974, Ser. No. 432,166
Int. Cl. A43c *11/00*; A44b *21/00*
U.S. Cl. 24—68 R **4 Claims**



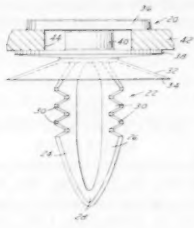
1. In combination, an elongate strap and a buckle for tightening and securing the strap, said buckle comprising a transversely extending cross arm at one end of the buckle, the strap having a free end adapted to be looped around the cross arm, a pair of short lever arms extending from the ends of the cross arm, transverse arms extending from the short lever arms in a direction generally parallel to the cross arm, one end of the strap being formed with a closed loop fixed around the transverse arms, a pair of elongate operating arms extending diagonally from opposite ends of the transverse arms toward that end of the buckle remote from the cross arm and crossing each other intermediate the ends of the buckle, said operating arms being significantly longer than the short lever arms to provide a substantial mechanical advantage for tightening the strap when the buckle is pivoted about the cross arm in a direction extending from a position adjacent that end of the strap looped about the transverse arms toward the strap looped about the cross arm, and inwardly opening confronting jaws at the ends of the elongate operating arms for engaging that end of the strap looped about the cross arm to retain the buckle in position adjacent the last named end and thereby secure the strap in its tightened condition.

3,860,999

FASTENER

Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Boston, Mass.

Filed May 3, 1973, Ser. No. 356,965
Int. Cl. A44b *21/00*; F16b *21/00*
U.S. Cl. 24—73 FT **1 Claim**



1. A trim panel fastening assembly including a panel member having one or more regular or symmetrically-shaped apertures therethrough and further including a one-piece fastener for each such aperture made wholly of resiliently deformable hardened plastic material;

each said fastener comprising axially aligned, integrally connected head and shank sections with said head section insertably installed in said aperture of the panel member and with the shank section thereof projecting from the panel member for engagement within an aperture in a supporting member for attaching the panel member thereto;

said head section comprising a pair of axially-spaced apart plate-like elements interconnected by a cross-sectionally reduced axially-extending neck portion, the plate-like elements extending perpendicular to the axis of the head and shank sections of the fastener;

a frusto-conical skirt element integrally connected to the plate-like element of the head section adjacent to the shank section and flaring outwardly and downwardly away therefrom, said skirt element being resiliently deformable and adapted to be yielding pressed against the margin of the supporting member surrounding the aperture into which the shank section is inserted to provide a seal therearound when the fastener has properly attached the panel member thereto;

the plate-like element of the head section adjacent to said shank section being generally circular in shape and having a diameter appreciably greater than the maximum dimension of the panel aperture and being spaced from the other plate-like element a distance substantially equal to the thickness of the panel member whereby the confronting faces of the two elements engage opposite surfaces of the panel member;

the plate-like element of the head section remote from said shank section being generally oblong in shape and having a minor dimension slightly less than the minimum dimension of the panel aperture and a major dimension appreciably greater than the maximum dimension of the panel aperture, the sum of the radius of said neck portion and the distance of the neck axis to the most distant point of said oblong element being substantially equal to the maximum dimension of the panel aperture, thereby enabling the free insertion of one smaller end of said oblong element through the panel aperture and the deformable reception of the opposite smaller end of the oblong element upon forceable rocking and twisting motion of the fastener into such aperture until said opposite end passes completely through the panel aperture for engagement with the inside marginal edge of the panel member surrounding the aperture thereby retaining the fastener in all positions within the aperture; and

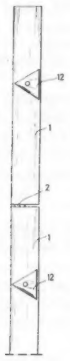
said shank section comprising at least two spaced apart outwardly bowed leg portions integrally joined together at their free ends, each leg portion being correspondingly notched on its respective exterior surface to provide a series of V-shaped teeth such that when the shank section is inserted into an aperture of the supporting member the leg portions are resiliently contracted toward one another by the marginal edges of the aperture and the crests of the teeth grippingly engage these marginal edges thereby to retain the shank of the fastener within the aperture for securely attaching the panel member to the supporting member.

3,861,000

FOLDABLE EDGE CLAMP FOR NEWSPAPERS AND MAGAZINES

Ilse Naumann, Yorkstrasse 6, Dusseldorf, Germany

Filed May 31, 1973, Ser. No. 365,616
Claims priority, application Germany, June 3, 1972, 20887
Int. Cl. B42f *1/00*; A44b *21/00*
U.S. Cl. 24—81 PC **9 Claims**



1. A foldable edge clamp for unbound reading matter such as newspapers and magazines comprising in combination:

a plurality of edge clamp sections arranged in longitudinal alignment with one another, the edge clamp sections having an outwardly substantially flat, cross-sectionally hairpin-shaped profile with a mouth portion on one longitudinal edge and with an upper profile leg and a lower profile leg connected by a longitudinal back bend opposite the mouth portion, the edge clamp profile being resiliently deformable to close its mouth portion, by bending the profile legs together against their normal opening bias;

a hinge connection between the ends of adjacent clamp sections, the hinge connection permitting folding of the edge clamp sections against one another for stowage; and means for individually clamping each edge clamp section to a common longitudinal edge of the reading matter.

3,861,001

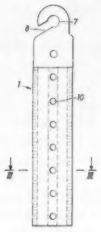
DEVICE FOR FIXING FOLDS IN CURTAINS AND DRAPES

Hermann Pape, Laggenbeck, Germany, assignor to Gardisette Holding AG, Lucerne, Switzerland

Filed June 4, 1973, Ser. No. 366,581
Claims priority, application Germany, June 3, 1972, 2227199
Int. Cl. E05d *13/02*; A44b *21/00*
U.S. Cl. 24—81 DS **15 Claims**

1. A device for fixing folds in curtains and drapes comprising

a retaining body, said retaining body including web means for forming at least one slot between two portions of said web means, said web means extending between respective opposite ends of said retaining body, said slot being open at said respective opposite ends and open outwardly between said two portions of said web means, wherein a fold inserted into the slot is elastically clampingly retained therein, and



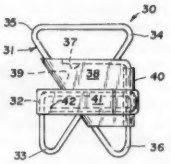
projection means for projecting into a respective slot, said projection means being provided at said web means, wherein said projection means are constructed tooth-like, and wherein said projection means projecting respectively from said two portions of said web means into said slot are arranged alternately overlapping one another.

3,861,002

MONEY CLIP

Edward L. Gordon, 2309 Pittock St., Pittsburgh, Pa. 15217

Filed Oct. 4, 1973, Ser. No. 403,425
Int. Cl. A44b *21/00*
U.S. Cl. 24—81 **1 Claim**



1. A money clip comprising a single length of spring wire bent so as to form two outermost clip parts and a central clip part, one of said outermost clip parts and said central clip part being of substantially triangular outline in offset relationship, the other outermost clip part being bent into substantially rectangular outline with an upwardly bent terminal portion, a flat name plate having marginal portions bent over said rectangular portion and thus secured thereto, a second flat plate having marginal portions bent over and secured to the wire portion forming said central clip part to provide a smooth outer surface over which paper currency may readily slide, whereby a paper currency stack may be folded centrally longitudinally with one half of the stack clipped between the substantially triangular outermost and central clip parts after which the other half of the stack is inserted and clipped between the central and name plate forming clip parts.

3,861,003

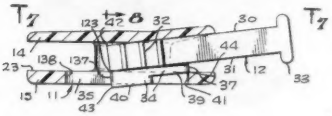
CORD LOCKING DEVICE WITH SAFETY LATCH

Ogden W. Boden, 1580 Gaywood Dr., Altadena, Calif. 91001

Filed June 22, 1973, Ser. No. 372,787
Int. Cl. F16g *11/00*
U.S. Cl. 24—136 B **9 Claims**

1. A cord lock comprising a body containing a passage through which at least one cord is to extend and having a restricted locking portion; a locking unit located at least par-

tially within said passage and movable between a locking position in which said unit clamps said cord tightly against a wall of the passage, and locks the cord against longitudinal movement toward a predetermined first end of said passage and a retracted position permitting such movement; and means for releasably retaining said locking unit in said locking position relative to said body and against movement to said retracted position; said retaining means including a first shoulder on said locking unit engageable with a coacting second shoulder on said boyd in a relation releasably retaining said locking unit in said locking position relative to the body; there being an additional shoulder formed on said locking unit and



spaced from said first mentioned shoulder and engageable with said second shoulder to limit retracting movement of the locking unit in said retracted position thereof; said first shoulder being movable out of engagement with and past said second shoulder by predetermined cocking movement of said unit relative to said body; said additional shoulder projecting outwardly from said locking unit farther than said first shoulder in a relation preventing movement of said additional shoulder out of engagement with and past said second shoulder by cocking movement of said unit relative to said body to the same angularity which releases said first shoulder from said second shoulder.

3,861,004

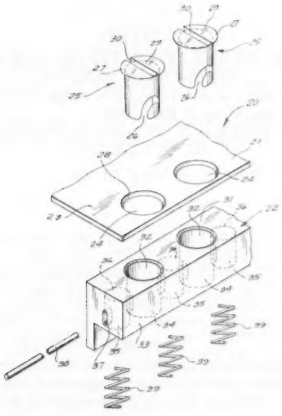
FLUSH HEAD PANEL FASTENER

Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Feb. 21, 1974, Ser. No. 444,333

Int. Cl. A44b *17/00*

U.S. Cl. 24—204 **4 Claims**



1. A panel fastener for rigidly interengaging two members so that the resultant assembly contains a substantially flush exposed surface comprising:

each of the members containing a row of holes adapted to be aligned with a row of holes in the other member;

one of the members having an engaging surface for contact with the other member and having a receptacle portion extending therefrom;

a row of cups in the receptacle portion with every other cup in communication with a hole in the one member;

a longitudinal pin shiftably mounted in the one member and extending through the cups;

a biasing element in each cup not aligned with a hole and retained in position by engagement with the pin;

a stud element adapted to extend through the aligned openings in the members and having a cam slot adapted to engage with the pin; and

the stud element being extendable entirely within the members from one side thereof so as to provide an exposed flush surface and being rotatable between an open and a closed position so that when the stud is rotated to the closed position, the pin will follow the cam slot and will bias the biasing element in each adjacent cup to retain the pin in the closed position and the members in rigid interengagement.

3,861,005

CATALYTIC ISOMERIZATION OF LUBE STREAMS AND WAXES

Ib Steinmetz, Wilmington, Del., and David S. Barmby, Media, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. Nos. 828,746, May 28, 1969, Pat. No. 3,658,689, and Continuation-in-part of Ser. No. 246,737, April 24, 1972, Pat. No. 3,764,516. This application Oct. 9, 1973, Ser. No. 404,822

Int. Cl. C07c *5/22*; **C10g** *35/06, 41/00*

U.S. Cl. 208—111 **24 Claims**

21. Process for increasing the yield of lower SUS viscosity, at 100° F, distillate fractions in a straight run distillate oil having a viscosity-gravity constant in the range of 0.83–0.94 and a viscosity at 100°F in the range of 200–12,000 SUS, said process comprising contacting said distillate oil with a catalyst comprising an acidic partially decationized crystalline alumino-silicate zeolite at a liquid hourly space velocity in the range of 0.1–10.0, based on the fresh feed and the crystalline zeolite content of the catalyst, and hydrogen pressure in the range of 400–6,000 psi, at a gas recycle rate in the range of 0–20,000 scf/bbl of fresh feed and at a temperature in the range of 350°–675° F, said space velocity, pressure, temperature and recycle conditions being selected so as to convert at least 16 weight percent of said feed to lower viscosity oils and with less than 15 weight percent conversion of said feed to materials boiling below 600° F.

3,861,006

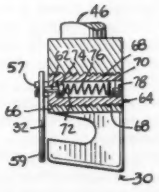
COUPLING DEVICE FOR A CUTTING MACHINE

Herbert R. Polleys, New Haven, Conn., assignor to Wellman Company, Medford, Maine

Division of Ser. No. 201,418, Nov. 23, 1971,. This application Aug. 22, 1973, Ser. No. 390,628

Int. Cl. A44b *13/00*

U.S. Cl. 24—232 **5 Claims**



1. A coupling device comprising a turnbuckle assembly having an eyelet, and a turnbuckle support assembly terminating in a hook upon which is removably mounted said eyelet; said turnbuckle support assembly including manually control-

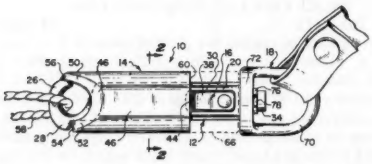
lable latch means mounted on said hook for movement from a closed hook position preventing said eyelet from being removed from said hook to an open hook position permitting said eyelet to be removed from said hook, and latch control means for removably maintaining said latch means in said open and closed hook positions; said latch control means including a spring confined in a bore formed in said hook, a detent element urged by said spring against said latch means, and a sleeve member threadedly constrained in said bore and terminating axially in an apertured end wall of reduced diameter; said detent element including a head portion conforming in size with and constrained in said sleeve, and an axially extending body of reduced diameter protruding through said aperture end wall and contacting said latch means.

3,861,007

SWIVEL COUPLING DEVICE

I. Irving Silverman, Lincolnwood, Ill., assignor to Runzel Cord & Wire Co., Chicago, Ill.

Filed Mar. 15, 1974, Ser. No. 451,459
Int. Cl. A44b *13/02*
U.S. Cl. 24—239 **12 Claims**



1. A swivel coupling device comprising:

A. a solid elongate body member whose cross sectional configuration is that of a circle with a flat chord whereby the body member is a generally elongate cylinder with an axially extending flat side, a hook formation integral with the body member and formed at one end thereof, the hook formation opening laterally,

B. a hollow sleeve member having an internal configuration substantially the same as that of the exterior configuration of the body member and being arranged for axial sliding only relative to the body member,

C. a stop projection integral with the body member at the said one end thereof and extending into the path of movement of the sleeve member, the sleeve member having an extension thereof adapted to close off the opening of the hook formation when the sleeve is in a first position at said first end of the body member and a portion of said sleeve is in axial engagement with said stop projection.

D. a swivel handle connected to the second end of the body member,

E. means to prevent axial sliding movement of the sleeve member beyond a second position at the second end of said body member and

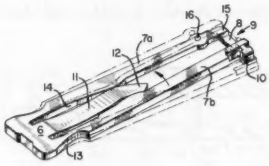
F. stop detent means connected with said body member and acting while in a blocking condition to prevent the movement of the sleeve member from its first position but manually operable to unblocking condition to permit movement of the sleeve member from the first position to the second position, the stop detent means being arranged to enable movement of the sleeve member from the second to the first position without manipulation.

3,861,008

CLAMP FOR SURGICAL PURPOSE, PREFERABLY FOR HOLDING TOGETHER FABRICS SERVING TO LIMIT AN OPERATION FIELD

Arne T. Wannag, Palnasvagen 11A, 13300, Slatsjobaden, Sweden

Filed Apr. 5, 1973, Ser. No. 348,009
Int. Cl. A44b *21/00*; **A61f** *13/00*.
U.S. Cl. 24—255 P **4 Claims**



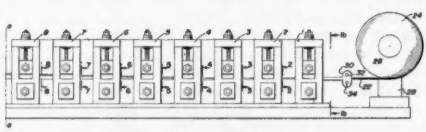
1. Clamp for surgical purposes, preferably for holding together fabrics serving to limit an operating field, comprising a generally planar part made from a resilient material such as plastics and having a web portion, a central tongue extending therefrom and two side tongues also extending from said web portion in the same direction as said tongue, said side tongues being located in such sideways proximity to said central tongue that the fabric material may pass through the spaces thus obtained, said side tongues being longer than said central tongue and having their free ends located at a predetermined distance from each other, said side tongues being further resilient so as to enable their free ends to be moved towards each other, said side tongues being also provided at their ends with locking means for arresting said side tongues in a position in which they are brought near to each other and in approximately the same plane in which they originally were, the tolerances between said central tongue and said side tongues being such that said fabric material will be clamped between the adjacent edges of said central tongue and said side tongues when said ends of said side tongues are brought near to each other.

3,861,009

PROCESS AND APPARATUS FOR FORMING STRUCTURAL MEMBERS

Peter J. Baxter, Chagrin Falls, Ohio, assignor to Modco International Inc., Chagrin Falls, Ohio

Filed May 3, 1973, Ser. No. 356,847
Int. Cl. B21d *31/04*
U.S. Cl. 29—6.1 **10 Claims**



1. An apparatus for forming structural members from strips of expandable material having a longitudinal axis comprising:

means for slitting the base in order to permit formation of a web in the base;

means for incrementally expanding the web in order to provide an increase in expansion capacity of the web without tearing, said means for incrementally expanding including frustum-like projections which engage and deform small areas out of the plane of the base;

means for stretching the base transverse to the longitudinal axis in order to form a web and utilize the deformed areas for expansion of the base.

3,861,010

BORING HEAD WITH EXCHANGEABLE BLADE

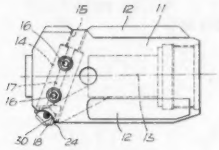
Siegfried Weinreich, Bierden, Germany, assignor to Gebrigder Heller, Uphusen, Germany

Filed Apr. 24, 1974, Ser. No. 463,805

Claims priority, application Germany, Apr. 25, 1973, 2320876

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 3 Claims



1. A boring head comprising a cylindrical body having a longitudinal axis extending therethrough, at least two support ledges protruding radially from said body and extending parallel to the axis thereof for providing support surfaces for centering the boring head in a bored hole, a cutter developed as an irregular hexagon the sides of which form a section of the sides of two equilateral triangles superposed on each other about an acute angle, said sections of the sides of one of said triangles providing three principal edges and said sections of the sides of the other of said triangles providing three secondary edges, said principal edges border three rake surfaces and said secondary edges border three rounded, ground chamfers, said cutter being mounted in recess means having two contact surfaces for abutting two of said three rake surfaces thereby fixing the position of said cutter in the boring head, and wherein one of said secondary edges extends parallel to said longitudinal axis of said body at a radial distance therefrom corresponding to the radial protrusion of said support ledges whereby said one secondary edge cooperates with said support ledges to provide centering of said boring head in a bored hole.

3,861,011

MILLING CUTTER

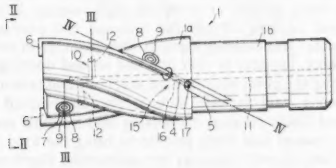
Shunzo Nose, Itami, and Shigetada Yoneyama, Nagoya, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 27, 1973, Ser. No. 391,832

Claims priority, application Japan, Sept. 1, 1972, 47-101442[U]

Int. Cl. B26d *1/12*

U.S. Cl. 29—105 R 1 Claim



1. A milling cutter comprising a body having a plurality of spiral grooves formed around the body; a plurality of inserts removably secured within said spiral grooves; cutting chip removing means for forcibly removing chips filling up a pocket, said chips removing means including a channel extending axially through the central part of said body and opening at the rear of said body and at least one fluid outlet port extending radially outwardly from said channel and opening at the pocket; and cutting edge adjusting means having an adjusting screw screwed into a marginal portion at the rear end of the spiral groove, an end of said screw being engageable with the rear end of said insert.

3,861,012

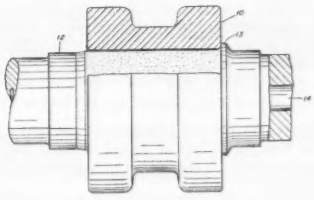
COMPOSITE ROLL AND METHOD OF FORMING THE SAME

Carl E. Spaeder, Jr., Monroeville, Pa., assignor to United States Steel Corp., Pittsburgh, Pa.

Division of Ser. No. 295,390, Oct. 5, 1972, Pat. No. 3,820,212. This application Oct. 15, 1973, Ser. No. 406,738

Int. Cl. B21b *31/08*

U.S. Cl. 29—129.5 5 Claims



1. A composite roll comprising a shell of hard wear-resistant metal and an arbor of tough shock-resistant metal, said shell being fixed to said arbor with an adhesive applied between the body of the arbor and the inside surface of the shell, said shell having sufficient clearance with the body of the arbor at room temperature to avoid a shrink fit and resulting tensile stresses in the shell.

3,861,013

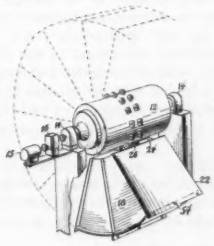
METHOD OF CONSTRUCTING A ROTOR FOR A ROTARY REGENERATIVE HEAT EXCHANGER

Hermann E. Kurschner, and Harlan E. Finnemore, both of Wellsville, N.Y., assignors to The Air Preheater Co., Inc., Wellsville, N.Y.

Filed Jan. 17, 1974, Ser. No. 435,393

Int. Cl. B23p *15/26*

U.S. Cl. 29—157.3 R 5 Claims



1. The method of constructing a rotor for a rotary regenerative heat exchanger comprising the steps of rotatably supporting a horizontally disposed rotor post on a pair of spaced-apart support bearings, pivotally connecting a first sector-shaped element basket to the rotor post intermediate the support bearings, permitting the rotor post with attached element mass to rotate in said bearings until it attains a state of equilibrium, pivotally attaching a second sector-shaped basket of heat absorbent element to the rotor post, permitting the rotor post to rotate in said bearings until a state of equilibrium is again achieved, alternately connecting other baskets of element to said rotor and then permitting them to rotate with the rotor

post to attain equilibrium until the rotor comprises an annular body, and connecting the radial outer ends of the sector-shaped baskets to one another to comprise an integral element mass that extends concentrically about and is pivotally attached to the rotor post.

3,861,014

FASTENER PLACING APPARATUS

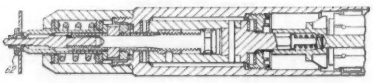
Frederick Arthur Summerlin, Wheathampstead, England, assignor to AERPAT A.G., Zug, Switzerland

Filed Jan. 7, 1974, Ser. No. 431,224

Claims priority, application Great Britain, Jan. 12, 1973, 1750/73; Feb. 20, 1973, 8238/73

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 B **7 Claims**



1. Apparatus for placing a fastener of the type comprising a threaded first part which is pulled towards and/or into a second part to place the fastener, which apparatus comprises: a body member;

a threaded member for threadedly engaging with the threaded first part of a fastener to be placed, said threaded member being rotatable and reciprocable with respect to the body member;

a lead-screw device comprising a first element and a second element in threaded engagement with each other, the first element being arranged to be rotationally driven, and the second element being drivingly connected to the threaded member whereby the threaded member may be rotated and reciprocated by the second element;

an abutment member for abutting the second part of the fastener when the threaded member is engaged with the first part of the fastener, the abutment member abutting the second part of the fastener when the said second part and the body member are drawn towards each other by rotation of the threaded member in a sense appropriate to advance the threaded member into threaded engagement with the first part of the fastener;

rotation-stopping means, actuated by engagement of the abutment member with the second part of the fastener as aforesaid, to stop rotation of the second element of the lead-screw device whereby continued rotation of the first element in the said appropriate sense causes relative rotational and axial movement of the first and second elements of the lead-screw device and longitudinal movement of the threaded member relative to the body member and the abutment member in a first direction to draw the first and second parts of the fastener towards each other;

a first torque-limiting rotary connection between the first and second elements of the lead-screw device;

and a second torque-limiting rotary connection between the second element of the lead-screw device and the body member;

the relationship between the torque-limiting rotary connections being such that when the first element of the lead-screw device is rotationally driven in the appropriate sense to engage the threaded member with the first part of the fastener, the torque limit sustained by the first connection is higher than that sustained by the second connection so that the threaded member rotates to engage the first part of the fastener until the actuation of the rotation-stopping means as aforesaid; and such that when the first element of the lead-screw device is rotationally driven in the opposite sense, the torque limit sustained by the first connection is lower than that sustained by the second connection so that the first element of the lead-screw device rotates with respect to the second element and causes longitudinal movement of the threaded member in a second direction opposite to the first direction.

3,861,015

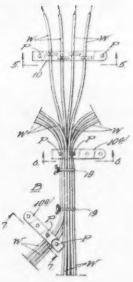
WIRE HARNESS CLIP

Frederick Hooven, Radnor, Pa., assignor to Gudebrod Bros. Silk Co., Inc., Philadelphia, Pa.

Filed June 4, 1973, Ser. No. 366,735

Int. Cl. H02b *9/00*

U.S. Cl. 29—203 MW **3 Claims**



1. Apparatus for use in the formation of wire harnesses comprising:

a harness board having a flat working surface;

at least one harness pin secured to said harness board and extending perpendicularly upward from the working surface of the harness board;

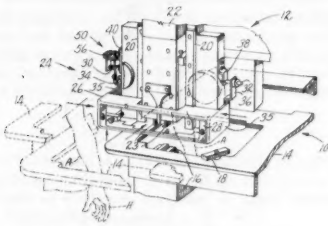
at least one wire harness clip removably secured to said harness pin to support the wires of said harness in a predetermined position relative to the working surface of said harness board with the wires of said harness extending generally parallel to the working surface of the board, said clip comprising a planar body portion having a free outer end and an inner end portion, means defining a first opening at said inner end portion of said body portion of a diameter slightly greater than the external diameter of the harness pin, said inner end portion integrally connected to a resilient and generally arcuate shaped locking portion, said arcuate locking portion terminating in a generally flat planar terminal end portion diverging from said body portion at an acute angle, means defining a second opening at said flat terminal end portion of a diameter substantially equal to the diameter of said first opening, the axes of said first and second opening intersecting at a point intermediate said body and terminal end portions, said arcuate locking portion adapted to be flexed under pressure by moving said terminal end portion toward said body portion to bring the axes of said first and second openings into substantial alignment and permit both said openings to engage over a harness pin and lock said clip to said harness pin upon release of pressure on said body and terminal end portions, the body portion of said clip extending in a direction normal to the axis of the harness pin to which said clip is attached to provide a flat wire support extending parallel to and spaced above the working surface of the harness board; and means at spaced locations along said body portion of said clip to hold wire of said wire harness in the desired position.

3,861,016

ELECTRIC SAFETY CONTROL MECHANISM

Herbert Johnson, and Frederick S. Sillars, both of Beverly, Mass., assignors to USM Corporation, Boston, Mass.

Filed Nov. 19, 1973, Ser. No. 417,417
Int. Cl. H05k *13/04*; **B26d** *5/08*
U.S. Cl. 29—203 B **10 Claims**



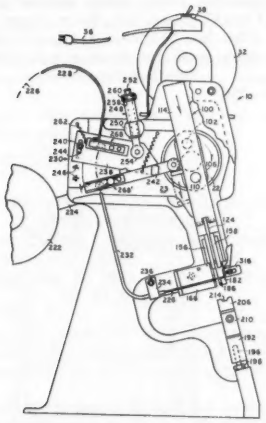
1. In a machine having elements relatively movable along convergent paths, and power means for driving at least one of the elements, a safety means comprising a guard mounted for movement with said one of the elements and displaceable in two or more directions relative to said one element, and a circuit for controlling actuation of the drive means, the circuit including a switch means responsive to displacement of the guard in any one of said directions for immediately deenergizing the power drive means.

3,861,017

STAPLING APPARATUS

Jack Garfinkel, 28-33 209th Pl., Bayside, N.Y. 11360, and Ronald K. Rosenberg, 50 Maplewood Dr., Plainview, N.Y. 11803

Filed Dec. 3, 1973, Ser. No. 421,391
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 DT **22 Claims**



1. A stapling apparatus comprising:

a. a support frame

b. an open-ended cavity member mounted on said support, said cavity member having a predetermined shape for receiving and guiding a staple about the elements to be stapled;

c. indexing means on said support for intermittently feeding material of a predetermined length from which a staple is formed to a staple-forming station;

d. a forming member on said support movable from a rest position wherein said forming member is spaced from said cavity member to an operate position wherein at least a portion of said forming member is juxtaposed to said cavity member;

e. an anvil at said staple-forming station having a face portion adapted to receive said staple material thereon, the width of said face portion being substantially less than the predetermined length of said staple material whereby said staple material extends beyond the edges of said anvil on each side thereof, said anvil being movable from an operate position wherein said anvil is in the path of movement of said forming member to an inoperable position wherein said anvil is spaced from the path of movement from said forming member;

f. said forming member comprising bending means movable with respect to said staple-forming station for engaging and bending the staple material about said anvil and for retaining the staple therein, and driving means movable between a first position and a second position whereby said driving means moves relative to said bending means to move the staple out of said bending means into said cavity as said driving means moves to said second position;

g. latching means for connecting said bending and driving means together for conjoint movement;

h. unlatching means responsive to the movement of said bending means to a preselected position in its path of movement for disengaging said latching means to permit movement of said driving means relative to said bending means from the first to the second position;

i. disengaging means for moving said anvil to the inoperable position after said staple is formed;

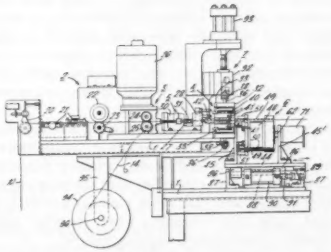
j. and selectively operable actuating means for sequentially operating said indexing means and for moving said forming member from said rest to said operate positions.

3,861,018

APPARATUS FOR ATTACHMENT OF A CONNECTOR TO AN END OF A WIRE

Yukito Matsuura; Yasushi Kakiwaki, both of Osaka; Takashi Yoshizaki, Kyoto, and Takeshi Tanaka, Osaka, all of Japan, assignors to Nippon Acchakutanahi Seizo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 10, 1974, Ser. No. 432,159
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 **3 Claims**



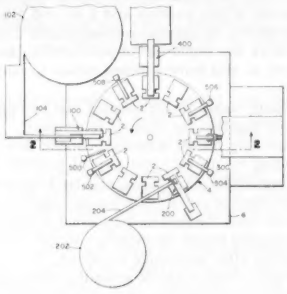
1. An overall automatic apparatus for attaching a connector to the end of a wire cut in a predetermined length from a long continuous supply thereof, including a wire shifting device comprising a rotatable wire holder capable of rotating such that the wire catching seat thereof is displaced in at least three angularlyspaced positions about an axis parallel to the path of wire supply, wherein in the first position said wire holder receives said cut wire and holds it for a period of time during which the conductor in the opposite end of said wire is uncovered; in the second position a connector is attached to said

uncovered conductor and in the third position the thus-finished wire is removed from said wire shifting device.

3,861,019
MACHINE FOR JOINING A CROSS MEMBER TO A BASE ELEMENT

Richard V. Choate, Hanson, and Leonard W. Williamson, Lexington, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Aug. 24, 1973, Ser. No. 391,269
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 E **35 Claims**



1. A machine for joining a cross member transversely to a base element with portions of said cross member extending laterally outward beyond the sides of said base element, the cross member characterized at the site of juncture by a perforated wall having upper and lower surfaces, the base element provided at the site of juncture with malleable projection adapted to fit through said perforation from the lower surface of said cross member wall with the head of the projection extending beyond the upper surface of said wall comprising: a plurality of support nests, each of said nests including an anvil adapted to carry a base element with its projection facing outward, and vertically moveable support means disposed laterally on each side of said anvil to support a cross member mounted transversely on a base element, said lateral support means adapted to yieldingly resist downward movement of a mounted cross member,

a station to load base elements one at a time onto said nests,

a station to feed cross members transversely onto base elements held in said nests, including positioning means to emplace a cross member with the base element projection aligned with said cross member perforation and with said outwardly extending cross member portions supported by said lateral support means,

a swaging station including a swaging punch, means for moving the punch towards said nest anvil a distance sufficient to deform the head of said base element projection and thereby lock the cross member on said base element,

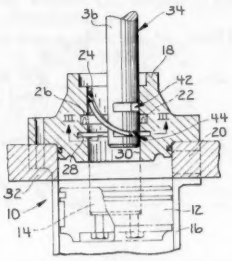
a discharge station including means to disengage a joined cross member and base element assembly from a nest, and

means for moving said nests progressively from said base element load station to said cross member feed station to said stamping station to said discharge station.

3,861,020
SEAL INSTALLING TOOL

Clinton F. Moewe, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 26, 1973, Ser. No. 354,898
Int. Cl. B23p *19/02*
U.S. Cl. 29—235 **7 Claims**

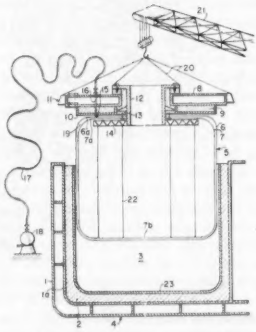


1. A device for installing a portion of a resilient member in a receiving member groove comprising: a body; holding means associated with the body for releasably holding a portion of the resilient member, so that the portion of the resilient member may be positioned relative to and adjacent the groove by positioning of the body relative to the receiving member; and means associated with the body for urging and moving the portion of the resilient member positioned relative to and adjacent the groove inwardly of the groove to install said portion of the resilient member in the groove, wherein the means for urging and moving the portion of the resilient member comprise cam means for urging and moving the portion of the resilient member inwardly of the groove upon rotation of the body about its longitudinal axis relative to the receiving member.

3,861,021
METHOD OF CONSTRUCTING A LOW TEMPERATURE LIQUEFIED GAS TANK OF A MEMBRANE TYPE

Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefield Gas Company, Ltd., Tokyo, Japan

Filed June 7, 1973, Ser. No. 367,722
Claims priority, application Japan, July 17, 1972, 47-71471
Int. Cl. B21d *39/00*
U.S. Cl. 29—455 **4 Claims**



1. In a method of constructing a low temperature liquefied gas tank of the membrane type, said tank comprising a rigid outer vessel, a compression-resistant heat insulating layer provided at the inside of said outer vessel, and a double-layered inner membranous vessel including outside and inside membranous vessels disposed at the inside of said heat insulating layer, said method comrising the steps of constructing said

outer vessel and said heat insulating layer so as to provide a hold space having an opened upper portion for receiving said double-layered inner membranous vessel, said double-layered inner membranous vessel being constructed separately from said outer vessel and heat-insulating layer, and thus outside of said hold space, and thereafter mounting said double-layered inner membranous vessel into said hold space, the improvement which comprises applying a vacuum to the space formed between said outside and inside membranous vessels in the process of mounting said double-layered inner membranous vessel into said hold space wherein said outside and inside membranous vessels are caused to contact each other substantially over the entire surface thereof, thereby increasing the rigidity of the double-layered inner membranous vessel.

3,861,022

METHOD OF MAKING INSULATED DUCTS

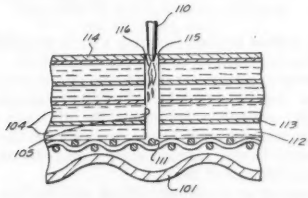
Ullrich Hildebrandt, Munich, and Albert Hofmann, Grunwald, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Aug. 8, 1973, Ser. No. 386,610

Claims priority, application Germany, Sept. 27, 1972, 2247220

Int. Cl. B21d *39/00*; **B23p** *19/04*

U.S. Cl. 29—455 **9 Claims**



1. A method of making an insulated duct, comprising the steps of:

surrounding an inner casing with an insulating body;

burning passages at spaced-apart locations through said body from the exterior inwardly;

inserting spacer elements through said passages and anchoring said spacer elements to said inner casing at one end; and

supporting an outer casing around said body on the other ends of said elements.

3,861,023

FULLY REPAIRABLE INTEGRATED CIRCUIT INTERCONNECTIONS

Barry Bennett, Carson, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 30, 1973, Ser. No. 356,010

Int. Cl. B01j *17/00*

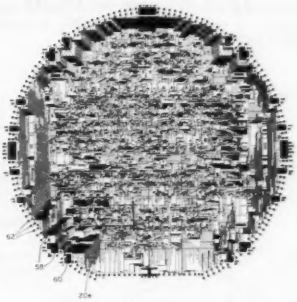
U.S. Cl. 29—574 **10 Claims**

9. An integrated circuit method for determining the operability and inoperability of a plurality of circuit devices having means defining electrical coupling pads, comprising the steps of:

insulating all of the circuit devices and providing at least duplicate feedthrough means to each of the coupling pad means of all of the circuit devices without regard to proper functioning of the circuit devices;

placing means defining conductive material through the duplicate feedthrough means to each of the coupling pad means of all of the circuit devices and extending the metal level means from all of the circuit devices to a level of metallization above the circuit devices for providing at least duplicate pads for each of the coupling pad means; and

testing all of the circuit devices at the level of metallization after said placing and extending steps for determining the



operability and any inoperability of all of the circuit devices.

3,861,024

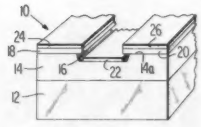
SEMICONDUCTOR DEVICES AND METHODS OF MAKING THE SAME

Louis Sebastian Napoli, Hamilton Square, and Walter Francis Reichert, East Brunswick, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 20,257, March 17, 1970, Pat. No. 3,764,865. This application Apr. 12, 1973, Ser. No. 350,604

Int. Cl. B01j *17/00*

U.S. Cl. 29—579 **17 Claims**



1. A method of making a semiconductor device comprising the steps of

a. providing on a surface of a body which is at least partially of semiconductor material a metallic layer of an area smaller than the area of said surface and having an edge spaced from an edge of said surface,

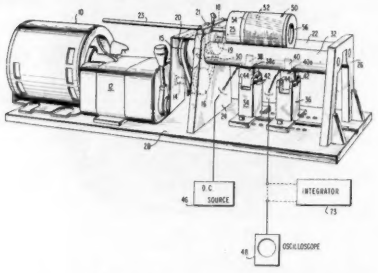
b. removing a portion of the material of the body which is at said surface and is along said edge of the layer and from under said edge to provide a second surface which is spaced from the first said surface with the edge of said layer overhanging said second surface, and

c. depositing a metal film on said second surface while masking the portion of said second surface under the overhanging edge of said layer so that the deposited metal film extends only up to said edge of said layer.

3,861,025
METHOD FOR TESTING AND BALANCING DYNAMOELECTRIC MACHINE ROTOR END RINGS

Marion W. Sims, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 209,872, Dec. 20, 1971,. This application Apr. 6, 1973, Ser. No. 348,758
Int. Cl. G01r *33/00*
U.S. Cl. 29—593 4 Claims

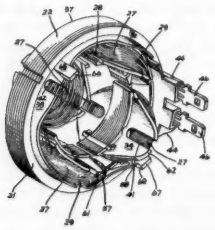


1. A method of testing for a defect in a dynamoelectric machine rotor end ring and for balancing a rotor end ring having detected a defect, the method comprising the steps of: generating a magnetic field; rotating a rotor about an axis within the magnetic field and thereby inducing a voltage in the rotor end ring; measuring the effect of the induced voltage by sensing the axial magnetic flux associated with current flow induced in the rotor end ring to detect a defect creating an electromagnetic imbalance in the rotor end ring; locating the defect to a segment of the rotor end ring; and removing material from the rotor end ring having a detected defect to electromagnetically balance the defective end ring.

3,861,026
METHOD OF MAKING DYNAMOELECTRIC MACHINES

Carl E. Swaim, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 180,757, Sept. 15, 1971, Pat. No. 3,780,323. This application July 3, 1973, Ser. No. 376,117
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 2 Claims

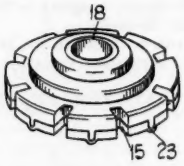


1. A method of manufacturing a dynamoelectric machine comprising a laminated magnetic core with winding accommodating regions, a molded in situ insulation system, at least one winding accommodated on the laminated magnetic core, and a substantially solid and rigid interstitial mass of particulate material embedded in a matrix and covering at least part of the at least one winding, the method comprising the steps of: positioning a stack of magnetic laminations in a first mold cavity; molding insulative material as ground insulation in situ on the core and molding locating surfaces of insulative material on the core while the core is in the first mold cavity so as to form locating surfaces having preselected spatial relationships relative to a predetermined portion of the core, removing the core and molded in situ insulative material from the first mold cavity; accommodating at least one winding on the core to form an insulated wound core assembly; relatively positioning the locating surfaces of insulative material and reference surface means within another mold cavity and molding a protective covering comprising an interstitial mass of particulate material and matrix forming material against at least a part of the at least one winding in the another mold cavity.

3,861,027
METHOD OF MANUFACTURING A ROTOR ASSEMBLY FOR A DYNAMO ELECTRIC MACHINE

Brian Robert Allen, Birmingham, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Nov. 23, 1973, Ser. No. 418,217
Claims priority, application Great Britain, Nov. 23, 1972, 54306/72
Int. Cl. H01r *43/00*
U.S. Cl. 29—597 7 Claims

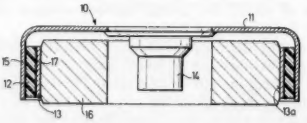


1. A method of manufacturing a rotor assembly for a dynamo electric machine comprising the steps of:
   a. stamping an annular conductive disc to produce in one face thereof a plurality of angularly spaced, generally radial grooves which divide the disc into conductive segments and which have a depth greater than the thickness of the disc so that corresponding ribs are formed on the other face of the disc,
   b. moulding an insulating body on said one face of the disc so that the groovés are filled with insulating material,
   c. forming a slot in each of the conductive segments defined between pairs of adjacent grooves,
   d. engaging one end of at least one of a respective pair of rotor windings of the dynamo electric machine in each of the slots in the conductive segments,
   e. resistance joining the ends of the rotor windings received in the slots of at least two conductive segments to their respective segements by using at least two electrodes to pass an electric current through the windings, the segments and the at least one rib defined between the segments, each electrode engaging at least one of the components defined by one of said segments and the windings associated with said one segment, and
   f. machining said other face of the disc to remove said ribs and thereby separate the conductive segments from one another.

3,861,028
METHOD OF PRODUCING A MAGNETO ROTOR

Hermann Mittag, Nuremberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 19, 1973, Ser. No. 407,970
Claims priority, application Germany, Nov. 11, 1972, 2255271
Int. Cl. H02k *15/04*
U.S. Cl. 29—598 4 Claims



1. A method of making a magneto rotor comprising a pot-shaped magnetically conducting casing bell (11) with a hub

(14) for mounting on a drive shaft and a pole ring (12) of synthetic material containing embedded magnetic particles on the inner circumference of said casing bell, which method comprises the steps of:

applying an adhesive to at least one of the matched circumferential surfaces respectively of said casing bell and of a pole ring of the aforesaid type having magnetized regions and having an inner diameter slightly smaller than the desired final dimension thereof;

placing said pole ring in position in said casing bell on the inner circumfernetial surface thereof;

introducing inside said pole ring a pressure plug (16) shaped to the desired final inner dimensions of at least the magnetized regions of said pole ring and thereby exerting an outward radial force while, warming the assembly and permanently deforming said pole ring to its desired final inner dimension;

allowing the assembly to cool and said adhesive to harden and thereby to bind said matched surfaces, and

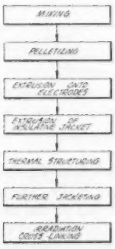
thereafter withdrawing said pressure plug.

3,861,029

METHOD OF MAKING HEATER CABLE

Robert Smith-Johannsen, and Jack McLean Walker, both of Portola Valley, Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Sept. 8, 1972, Ser. No. 287,444
Int. Cl. H05b *3/10*
U.S. Cl. 29—611 **2 Claims**



1. A method of forming an electrically conductive self-regulating article which comprises the steps of (1) extruding onto a pair of elongate parallel electrodes held in spaced-apart relation an electrode-interconnecting web of a composition consisting essentially of a thermoplastic crystalline polymeric material exhibiting overall at least about 20 percent crystallinity as determined by x-ray diffraction and (b) conductive carbon black, the percentage by weight (L) of carbon black based on the total weight of said composition being not greater than about 15, the resulting extrudate exhibiting room temperature resistivity (R, ohm-cm) greater than about 10^7, and (2) annealing the extrudate at or above the melting temperature of said crystalline polymeric material for a period of time sufficient to reduce R to satisfaction of the equation

$$2L + S \log_{10} R \quad 45,$$

the value L being not more than about ten, annealing being performed at a temperature of at least about 300°F over a period of not less than about 15 hours.

3,861,030

ARTICLE AND METHOD FOR LOCATING CONTACTS

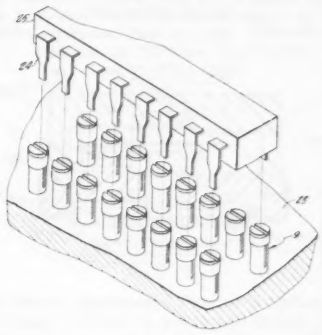
Richard F. Otte, Los Altos, and Lajos J. Vidakovits, Mountain View, both of Calif., assignors to Raycehm Corporation, Menlo Park, Calif.

Filed Apr. 4, 1974, Ser. No. 457,995
Int. Cl. H05k *3/32*
U.S. Cl. 29—626 **13 Claims**

1. An article for use in connecting an electronic component to a printed circuit board or the like comprising:

a carrier member having a plurality of extending tabs, said tabs being spaced apart a distance substantially equal to the spacing of the leads of an electronic component;

a plurality of contact devices, each of said contact devices having means defining an opening, said opening defining means being temperature responsive so that said opening can selectively and reversibly assume a smaller dimension condition at a first temperature and a larger dimension



condition at a second temperature, said smaller dimension being smaller than a corresponding dimension of said tabs and said larger dimension being larger than said corresponding dimension;

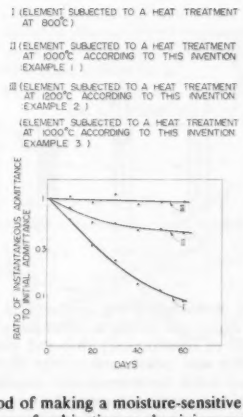
each of said contact devices being positioned on said carrier member with its opening defining means receiving one of said tabs, said opening defining means being in its smaller dimension condition whereby said opening defining means firmly grasps said tab.

3,861,031

METHOD OF MAKING A MOISTURE-SENSITIVE ELEMENT

Akio Furuichi, Kamifukuoka, Japan, assignor to Rikagaku Kenkyusho, Hirosawa, Wako-shi-Saitama-ken, Japan

Filed May 1, 1974, Ser. No. 465,992
Int. Cl. H01c *17/00*
U.S. Cl. 29—610 **6 Claims**


I (ELEMENT SUBJECTED TO A HEAT TREATMENT AT 800°C)
II (ELEMENT SUBJECTED TO A HEAT TREATMENT AT 1000°C ACCORDING TO THIS INVENTION EXAMPLE 1)
III (ELEMENT SUBJECTED TO A HEAT TREATMENT AT 1200°C ACCORDING TO THIS INVENTION EXAMPLE 2)
(ELEMENT SUBJECTED TO A HEAT TREATMENT AT 1000°C ACCORDING TO THIS INVENTION EXAMPLE 3)
RATIO OF INSTANTANEOUS ADMITTANCE TO INITIAL ADMITTANCE
1
0.3
0.1
0
20
40
60
DAYS

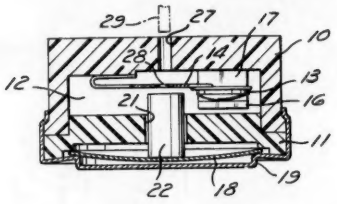
1. A method of making a moisture-sensitive element comprising the steps of: subjecting an aluminium matrix to electrolytic treatment to produce a porous film of aluminium oxide on said matrix; removing said aluminium oxide film from said matrix; subjecting said aluminum oxide film to a heat treat-

ment; and attaching metal electrodes to the opposite surfaces of said aluminium oxide film.

3,861,032
METHOD OF MANUFACTURING AND TESTING THERMAL FUSES

Donald J. Schmitt, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio

Filed Oct. 24, 1971, Ser. No. 409,254
Int. Cl. H01h *69/02*
U.S. Cl. 29—623 **16 Claims**

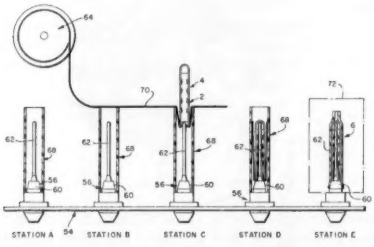


1. A method of testing a nonautomatic bimetal snap disc operated thermal fuse device or the like in which said disc moves from a reset position to an operated position in response to an operating condition comprising subjecting said device to its operating conditions and causing said disc to move to its operated position while determining if the operation thereof is within the required limits, and thereafter resetting said disc by applying sufficient force to the disc thereof to move said disc back to its reset position, said force being applied to said disc at least in part by means which do not constitute a part of the complete device and which are not readily available when the device is installed in a system.

3,861,033
METHOD OF MANUFACTURING A CONNECTOR FOR INSULATED CONDUCTORS

James H. Updyke, Pepperell, and John W. Dalton, Chelsea, both of Mass., assignors to TRW Inc., Cleveland, Ohio

Division of Ser. No. 312,008, Dec. 4, 1972, Pat. No. 3,784,731.
This application June 26, 1973, Ser. No. 373,695
Int. Cl. H01r *43/00*
U.S. Cl. 29—628 **3 Claims**

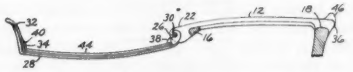


1. A method of manufacturing an electrical connector of the composite sleeve type having an outer jacket of insulating material, a pair of telescopically disposed metallic sleeves positioned within said jacket, and a liner having a portion thereof disposed within the inner of said metallic sleeves and an extension of said portion disposed between the outer of said metallic sleeves and the jacket comprising: (1) providing a die having a vertically extending elongated post, said post having a width less than the width of the central bore in said inner metallic sleeve; (2) providing an open ended tube of electrical insulating material of predetermined length and placing said tube on said die such that said elongated post is disposed within said tube substantially coaxially therewith; (3) placing a strip of electrically nonconductive, thin, filmlike material over the upper end of said tube such that the longer axis of said strip lies substantially transverse the longitudinal axis of the tube; (4) inserting said telescopically disposed metallic sleeves, open end leading, into said tube, whereby said strip is carried down into said tube and engaged by the upper end of said post and a portion of said strip is carried by said post into said central bore in said inner metallic sleeve substantially to the full depth of said bore to form said liner and other portions of said strip are reversely bent around the leading end wall of said outer sleeve and directed toward the remote end of said sleeve between the outer wall thereof and the inner wall of said tube to form said extension of said liner; (5) shrinking said tube on said outer sleeve to form said jacket and sandwich said last above mentioned portions of said strip between said jacket and said outer metallic sleeve; and (6) removing said connector from said die.

3,861,034
SAFETY RAZOR WITH REPLACEABLE BLADE AND CARRIER ASSEMBLY

Michael J. Cerino, 2468 Sunset Dr., Ventura, Calif. 93003

Filed Oct. 12, 1972, Ser. No. 296,990
Int. Cl. B26b *21/30, 21/24*
U.S. Cl. 30—58 **2 Claims**



1. A safety razor, comprising:
a. a handle,
b. a laterally elongated head supported by the handle,
c. a laterally elongated blade carrier,
d. a razor blade mounted on the carrier,
e. a pivot pin on one end of one of said head and carrier and an open hook on the corresponding end of the other of said head and carrier arranged to receive said pin freely therethrough for detachably securing the carrier to the head for pivotal movement on the axis of said pin to a position overlying the head, with the razor blade interposed therebetween, and
f. means on the opposite end of the head and carrier for releasably securing the carrier to the head in said overlying position.

3,861,035
CONDUIT AND CABLE CUTTER ATTACHMENT FOR EXPLOSIVE ACTUATED DEVICES

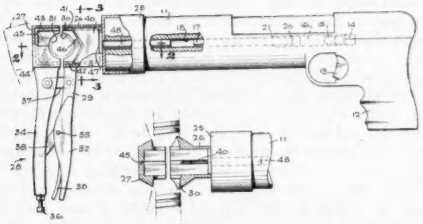
Woodrow W. Ramey, 3007 Angus St., Los Angeles, Calif. 90039, and Walter L. Howland, 601 S. Sunset Canyon Dr., Burbank, Calif. 91501

Filed Jan. 12, 1973, Ser. No. 323,245
Int. Cl. B23d *21/10;* **B26d** *3/16*
U.S. Cl. 30—92 **6 Claims**

1. A cutting attachment in combination
with an explosive actuated device having a central bore formed in an elongated barrel for slidably mounting a piston movably responsive to expansion gases of an explosive discharge, said cutting attachment comprising:
a cylindrical body having an open-ended passageway extending therethrough;
means releasably coupling said body to said barrel whereby said passageway and said bore are co-extensive;
a pair of jaw members movable with respect to each other for gripping an article to be severed therebetween;

one jaw member of said pair fixedly secured to said cylindrical body;

a cutting blade movably mounted on said jaw members for reciprocal movement passed said article to be severed in response to movement of said piston through said bore; and

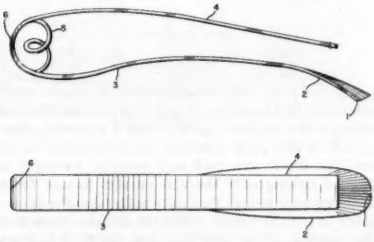


handles secured to said movable jaw member and to said fixed jaw member and links pivotably interconnected between said handles constituting a releasable lock-grip vise for holding said article to be severed.

3,861,036
BOILED EGG SHELL PEELER

Dorothea F. Eichhorn, 153 Castle Cres., Oakville, Ontario, Canada

Filed Oct. 11, 1973, Ser. No. 405,577
Claims priority, application Canada, May 2, 1973, 170270
Int. Cl. B26b *27/00*; **B25b** *9/02*
U.S. Cl. 30—120.1 **3 Claims**

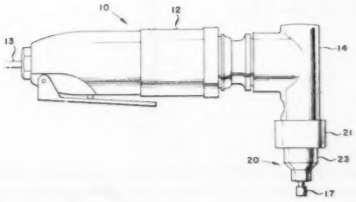


1. A tongs-like hand tool for use in removing a rupturable outer protective layer of a generally spherical object, such as the shell from a boiled egg, comprising a lower blade, an upper blade connected thereto and forming a handle portion adjacent the connection, said upper blade extending therefrom in at least partial overlapping relation with the lower blade, the lower blade having a curved outer end portion the surface thereof remote from the upper blade being contoured in downward concave, part-spherical relation to facilitate insertion of the lower blade in axial advancing separating relation between said outer layer and the remainder of said object, wherein the curved surface of the lower blade substantially conforms with the surface of the object, said upper blade being flexibly displaceable into gripping relation with said lower blade to secure a portion of said outer layer therebetween.

3,861,037
NIBBLING TOOL

Glen H. Smith, Woodland Hills, and Clarence W. Spence, North Hollywood, both of Calif., assignors to Lockhead Aircraft Corporation, Burbank, Calif.

Filed Feb. 20, 1973, Ser. No. 333,483
Int. Cl. B26b *15/00*
U.S. Cl. 30—228 **3 Claims**



1. A nibbling tool comprising:

a circular die member having a hollow cylindrical bore and a continuous annular surface defining the exposed end of said bore;

a cylindrical punch having a driven end slidably supported within said bore for reciprocation therein, and a shearing end extending beyond said annular surface;

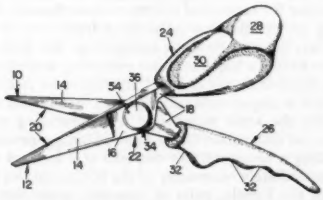
a cylindrical notch in said punch interposed between said driven end and said shearing end, and in confronting juxtapositioned relationship with respect to said continuous annular surface; and

means for reciprocating said punch through a displacement sufficient to initially extend said notch beyond said annular surface and thereafter retract said notch within said bore.

3,861,038
SHEARS

Wesley N. Charles, Springfield; Robert L. Panaia, Wilbraham, and Bruce H. Hunter, East Longmeadow, all of Mass., assignors to Wesley N. Charles, Springfield and Robert L. Panaia, Wilbraham, both of Mass.

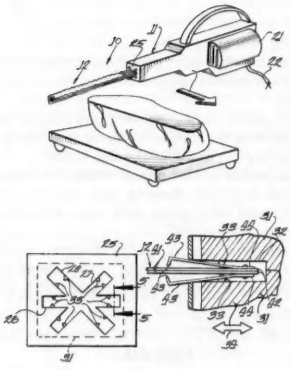
Filed Oct. 25, 1973, Ser. No. 409,410
Int. Cl. B26b *13/16*
U.S. Cl. 30—261 **1 Claim**



1. In shears of the type comprising a pair of crossed, pivotally connected cutting blades, the improvement comprising: contour handles on the blades, one of the contour handles being provided with depressions for accepting the thumb and heel of the user's hand and the other of the contour handles

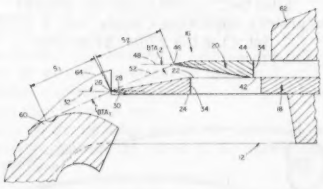
being provided with depressions for accepting the fingers of the user's hand, means for biasing the blades to an opened position comprising a ring-like spring disposed at the pivotal connection between the blades and fixed at one end to the blade pivot and at its opposite end to one of the blades, and means for varying the torque of the biasing means comprising a plurality of openings in said one of the blades for receiving the end of the spring whereby the torque of the spring may be varied by moving the end of the spring from one opening to another for permitting the shears to be adjusted to the needs of the user.

3,861,039
ELECTRIC KNIFE
Earl S. Truax, 1863 S. 90th St., Omaha, Nebr. 68124
Filed Dec. 3, 1973, Ser. No. 421,098
Int. Cl. B26b *7/00*
U.S. Cl. 30—272 A **1 Claim**



1. An electric knife including a handle member having a motor therein and a reciprocating device operably attached to the motor for reciprocal driving motion thereby, the reciprocating device disposed adjacent a front end of the handle member, the electric knife comprising: the front end of the handle having a horizontal slot extending therethrough, and a knife member having one end adapted to be inserted through said slot to engage said reciprocating mechanism in a manner to drive the knife member in a reciprocating manner at a horizontal disposition to the handle; the reciprocating device including a horizontal slot disposed at a forward end thereof and immediately rearwardly of the horizontal slot in the front end of the handle, pairs of opposing projections vertically aligned and projecting inwardly of said reciprocator slot and adapted to engage said terminal end of said knife member to effect reciprocating movement thereof; the knife member comprising a pair of juxtapositioned blade members, each blade member being the mirror image of the opposite blade member, each blade member having an interior surface and an exterior surface and a serrated cutting edge along each side edge thereof, said interior surfaces of said blade members being disposed in juxtaposition, a pin member projecting outwardly of the interior surface of one of said blade members and adapted to engage in a sliding and guiding manner an elongated longitudinal slot disposed in the free end of the opposite blade member such that the blade members are guided for reciprocal movement relative to each other, a resilient spring member operatively associated with each terminal end of each blade member, each spring member having an innermost edge with a lip projecting outwardly therefrom and rigidly attached to the exterior surface of the terminal end of said associated blade member, the free outermost edge of each resilient member including a flange portion projecting at an angle to the resilient member in the direction of the associated blade member and spaced outwardly therefrom, and a pair of laterally spaced apart apertures disposed in each resilient member adjacent the innermost edge thereof and adapted to be releasably engaged by said projections in said reciprocating device when said blade members are inserted into the front end slot and associated reciprocating device slot of the electric knife handle; the front end of the handle further comprising a pair of crossing diagonal slots defining a general X-shape, said reciprocating device further including a similar pair of X-shaped slots disposed inwardly of said front end X-shaped slots and further including sets of projecting members projecting inwardly of said reciprocator X-shaped slots whereby the terminal end of the knife blade may be selectively inserted into a diagonal slot in a manner to engage the reciprocating device to effect the reciprocating relative movement of the blade members relative to each other at the angle relative to the handle member.

3,861,040
PLURAL EDGE BLADE UNIT
Francis W. Dorion, Jr., Hingham, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Sept. 8, 1972, Ser. No. 287,335
Int. Cl. B62b *21/54;* **B26b** *21/22*
U.S. Cl. 30—346.58 **2 Claims**



1. A plural edge blade unit for insertion into a razor of the injector type that has cap and guard structures, said blade unit including a leading plate member and a following plate member, each of said plate members being bounded by first and second flat faces, and each said member having a straight, sharpened cutting edge thereon parallel to said faces, each said cutting edge being offset outwardly from the center of the member at least about one-third the distance from the center of the member to its said first face, each of said members having passages penetrating therethrough for facilitating removal of shaving debris from the vicinity of said cutting edge, the second faces of said leading and following members being permanently spot welded together in position to maintain a fixed distance between said cutting edge of said leading member and said cutting edge of said following member, said distance being in the range of 0.03 inch to 0.08 inch, and said cutting edges positioned parallel to each other and in a plane inclined to said second faces, each said cutting edge being offset outwardly from the center of the member and being defined by two facets, each facet being inclined with respect to the immediately adjacent face and the bisector of the angle

defined by said two facets being parallel to said faces, the angle between said bisector of the edge of said following member and a plane passing through the edge of both said members being fixed and in the range of 20° to 32°, and the perpendicular distance between said angle bisectors being less than 0.02 inch.

3,861,041
LUBRICANT AND METHOD OF FITTING AND TRAIL MOUNTING OF PROSTHODONTIC APPLIANCES

Arthur Milton Bell, 211 Chadwick Rd., Teaneck, N.J. 07666

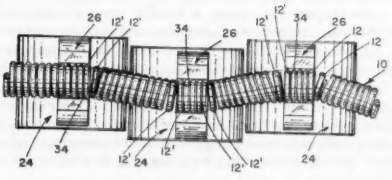
Continuation-in-part of Ser. No. 184,949, Sept. 29, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 326,575
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 **10 Claims**

1. A method for the fitting and trial mounting of a restoration on the prepared teeth of a patient, said method including the steps of: (a) preparing the tooth or teeth for mounting and fitting of at least one restoration; (b) preparing the restoration for the fitting to the prepared tooth or teeth; (c) applying a lubrication compound to at least one of the fitting surfaces of the restoration and prepared tooth or teeth so that when the restoration is fitted both fitting surfaces are coated with the lubrication compound, said lubrication compound being a stable, water soluable, nontoxic, non-setting, non-flowing, greaseless base, said compound also including as a portion thereof a bacteriostatic agent and an anti-inflammatory agent; (d) mounting the restoration on the prepared tooth or teeth and pressing to insure the desired degree of seating of the restoration; (e) leaving the restoration on the prepared tooth or teeth for a period of time during which the bacteriostatic agent prevents noxious odor forming bacteria from entering the trial fitting surfaces and the anti-inflammatory agent desensitizing and controlling inflammation of prepared tooth; (f) removing the restoration from the prepared tooth or teeth, and (g) cleaning the lubricant from the prepared tooth or teeth and from the restoration.

3,861,042
ORTHODONTIC ARCH WIRE AND METHOD OF FORMING THE SAME

Melvin Wallshein, 8645 Bay Pky., Brooklyn, N.Y. 11214

Filed Oct. 25, 1972, Ser. No. 300,444
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **1 Claim**

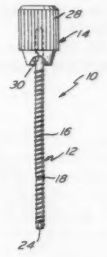


1. A method of applying an orthodontic arch wire to an orthodontic bracket on a malocclued tooth, the orthodontic bracket generally having a U-shaped channel terminating in a pair of opposite ends, said method comprising the steps of coiling a single flexible strand into a helix having a lumen extending therethrough and forming an array of successively abutting, substantially parallel turns, said strand when formed into said turns having a predetermined radial thickness and said turns having a common internal dimension of said lumen so greater than twice said predetermined radial thickness of said strand; inserting the twisted strand into the U-shaped channel of the orthodontic bracket; bending the coiled strand where desired such that looped-turns at each of the opposite ends of the U-shaped channel are at least partially moved out of contact with one another; and securing the coiled strand within the U-shaped channel.

3,861,043
DENTAL PIN

Nathaniel H. Lieb, Narberth, and Richard A. Wallace, Audubon, both of Pa., assignors to Star Dental Manufacturing Co., Inc., West Conshohocken, Pa.

Filed Apr. 11, 1973, Ser. No. 350,235
Int. Cl. A61k *5/02*
U.S. Cl. 32—15 **10 Claims**

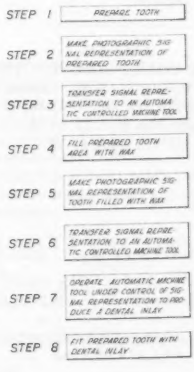


1. A dental pin comprising a shaft, a thread formed of said shaft, said thread having an arcuate outer edge, said shaft having a lower end, and means for tapping a thread in a tooth on said shaft, said tapping means comprising a cutting face on said thread, said cutting face being formed as the leading edge of said thread, said cutting face being formed at the lower end of said shaft, said shaft having a flute formed on the bottom thereof, said thread terminating at said flute, and said cutting face comprising the leading edge of said thread adjacent said flute.

3,861,044
DENTAL FITTING PROCESS

William E. Swinson, Jr., 2083 Renault Ln., N.E., Atlanta, Ga. 30345

Continuation of Ser. No. 250,290, May 4, 1972, abandoned. This application July 16, 1973, Ser. No. 379,466
Int. Cl. A61c *9/00*
U.S. Cl. 32—17 **17 Claims**


STEP 1
PREPARE TOOTH
STEP 2
MAKE PHOTOGRAPHIC SIGNAL REPRESENTATION OF PREPARED TOOTH
STEP 3
TRANSFER SIGNAL REPRESENTATION TO AN AUTOMATIC CONTROLLED MACHINE TOOL
STEP 4
FILL PREPARED TOOTH AREA WITH WAX
STEP 5
MAKE PHOTOGRAPHIC SIGNAL REPRESENTATION OF TOOTH FILLED WITH WAX
STEP 6
TRANSFER SIGNAL REPRESENTATION TO AN AUTOMATIC CONTROLLED MACHINE TOOL
STEP 7
OPERATE AUTOMATIC MACHINE TOOL UNDER CONTROL OF SIGNAL REPRESENTATION TO PRODUCE A DENTAL INLAY
STEP 8
FIT PREPARED TOOTH WITH DENTAL INLAY

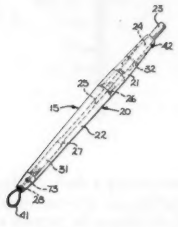
1. A process of fitting a tooth with dental inlay material, such as gold, including:

a. effecting a tooth preparation which is to receive a dental inlay;

b. producing a signal representative of said tooth representation;

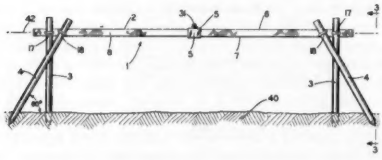
c. transferring said signal representation to an automatically controlled machine tool;
d. automatically operating said machine tool under control of said signal representation to produce an inlay complementary to said tooth preparation; and
e. fitting said machine inlay to said tooth preparation.

3,861,045
ORTHODONTIC ELASTIC INSERTER TOOL
Marvin R. Canter, 22595 Waterbury, Woodland Hills, Calif. 91364; Stantion R. Canter, 19274 Berclair Ln., Tarzana, Calif. 91356, and Robert A. Shuken, 1800 Roscomare Rd., Los Angeles, Calif. 90024
Filed Sept. 24, 1973, Ser. No. 399,863
Int. Cl. A22c *25/00*
U.S. Cl. 32—66 **13 Claims**



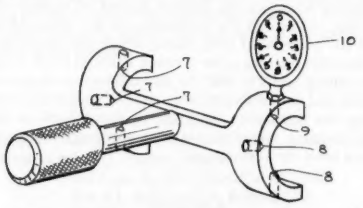
1. An orthodontic inserter tool comprising:
a. a housing defining an aperture at one end;
b. a shaft disposed within said housing;
c. a hook disposed at the end of said shaft for securing an elastic thereto; and,
d. an extending and retracting means for moving said shaft from an extended position to a retracted position such that said hook is disposed within said housing and from said retracted position to said extended position;
wherein said elastic may be disposed on said hook when in an extended position, after which said hook may be moved to said retracted position such that said elastic is generally shaped in a loop and may be disposed on orthodontic braces, after which said hook may be extended and said elastic removed.

3,861,046
BATTER BOARD CONSTRUCTION
Kevin L. Arn, 4645 Fourth St., N.W., Canton, Ohio 44708
Continuation-in-part of Ser. No. 359,546, May 11, 1973, abandoned. This application Apr. 22, 1974, Ser. No. 462,803
Int. Cl. E04g *21/18*
U.S. Cl. 33—86 **9 Claims**



1. A batter board construction including a hollow, tubular, rigid horizontal cross member having a rectangular cross-sectional configuration; slide means mounted on the cross member and adapted for adjustable sliding movement therealong; pin means mounted on the slide means and projecting vertically upwardly from said slide means and cross member, said pin means being a tie point for a flexible construction layout line and a reference sight point; locking bolt means mounted on the slide means and engageable with the cross member for locking the slide means in a selected adjusted position, said locking means being separate from the pin means; a pair of vertical end posts mounting the cross member in a horizontal position, and being adapted to be driven into the ground to support said cross member; a pair of angle braces extending downwardly outwardly from the ends of the cross member in a direction generally aligned with the longitudinal axis of said cross member, said angle braces being adapted to be driven into the ground to reduce longitudinal movement of the cross member; first and second pairs of bracket means adjustably connecting the vertical end posts and angle braces, respectively, to the cross member; the vertical end posts and angle braces being formed of metal and having a generally cylindrical shape; and the bracket means forming adjustable U-shaped openings through which said end posts and angle braces extend, whereby said bracket means may receive end posts and angle braces of various diameters.

3,861,047
TAPER GAUGE
Otto E. Dietrich, 617 W. Jackson St., Morton, Ill.
Filed Aug. 9, 1972, Ser. No. 278,946
Int. Cl. G01b *5/00*
U.S. Cl. 33—174 E **1 Claim**



1. A shaft-taper measuring-gauge device comprising in combination, a pair of spaced-apart semi-circular yoke-shaped structure each having a concave face wherein the concave face on one of said yoke-shaped structures is in substantical alignment with the other concave face of the other of said yoke-shaped structures a member for fixedly connecting said yoke-shaped structures, a handle structure extending laterally outwardly from said member, said yoke-shaped structures each further including three radially inwarding extending pins extending from said concave faces, wherein at least two of said pins in each of said yoke structures are in linear alignment, in one of said yoke-structures one of the pins which is in linear alignment being mounted for axial movement, and including indicator means responsive to the movement of said movable pin to indicate axial movements to and fro of said movable pin.

3,861,048
COMPENSATED DIOPTER GAUGE
Kenneth B. Thompson, Hialeah, Fla., assignor to Optical Standards Company, Incorporated, Lancaster, Calif.
Filed Sept. 25, 1972, Ser. No. 291,687
Int. Cl. A61b *5/08, 5/10;* **B23f** *23/08;* **B23g** *17/04*
U.S. Cl. 33—174 A **5 Claims**

1. A diopter gauge for measuring the surface power of a curved lens and for compensating for nonlinearities in the relationship of lens sagitta to surface power to provide an accurate reading of the measured power in diopters, comprising:
dial means including a dial body, linear scale means on a rotatable face portion, associated indicator needle means,

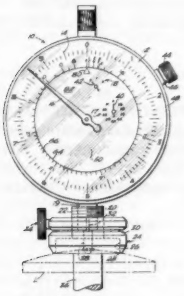
and a nonrotatable face portion, said scale means having uniformly spaced markings numbered from zero and indicating predetermined units of diopter measurement; a base member fixed with respect to said dial body, for contacting the surface of the lens, said base member including a contact ring having an inner cylindrical wall, an outer cylindrical wall and a lens-contacting edge which is circularly convex in radial cross-section through said contact ring;

a nonlinear compensating scale also located on said rotatable face portion of said dial means and fixed with respect to said linear scale, said nonlinear scale including a zero mark coincident with zero on said linear scale and a plurality of variably spaced scale divisions consecutively numbered to correspond to diopter values indicated on said linear scale, the location of any of said scale divisions measured from said zero mark being given by the expression:

$$E = (0.53/D \pm r) - [(0.53/D \pm r)^2 - (Y \pm r)^2]^{1/2} - DX_1$$

where

E = an error value in an uncompensated diopter reading, the error value being represented by the distance of a particular one of said scale divisions measured from said zero mark in the same units as are used for said linear scale but in a negative direction with respect to said linear scale,



D = a diopter value corresponding to the particular scale division,

r = the cross-sectional radius, in meters, of said lens-contacting edge,

X_1 = an incremental sagitta value, in meters, corresponding to an incremental diopter value of unity on said linear scale, and

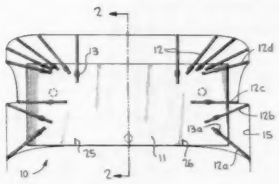
Y = the radius, in meters, of said inner cylindrical wall, for convex surface measurements, or said outer cylindrical wall, for concave measurements, the value of Y being selected to yield a zero error value, E, for a particular value of D;

fixed reference means on said non-rotatable face portion of said dial means; and

means for moving said linear and nonlinear scales on said rotatable face portion with respect to said fixed reference means to compensate for the nonlinear relationship between the surface power of said lens and the motion of said plunger means;

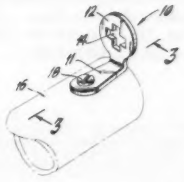
whereby a compensated reading of lens surface power in diopters is obtained by first obtaining an uncompensated reading on said linear scale with said reference means pointing to said zero mark, then moving said rotatable face portion until the reading of said reference means on said nonlinear scale is equal to the reading of said indicator needle means on said linear scale, and the error value E is thereby subtracted from the uncompensated reading.

3,861,049
DISPOSABLE TEMPLATE
Albert F. Muller, 7713 Dublin Dr., Camp Springs, Md. 20023
Filed Aug. 7, 1970, Ser. No. 62,016
Int. Cl. G01b *5/20*
U.S. Cl. 33—175 **3 Claims**



1. A disposable template for defining a space comprising a flat plate covering a major portion of said space, a plurality of finger means extending at freely selected locations outwardly from said plate and forming a planar extension thereof, and adhesive substance means for fixedly positioning said finger means on said plate, the tips of said finger means with extrapolation defining outer limits of said space, said adhesive substance means fixedly holding said finger means in position when the template is removed from said space, said finger means comprising light weight, flexible, tubular members substantially the size of a drinking straw.

3,861,050
GUN SIGHT
Richard Mauro, 2326 Powell Ave., Bronx, N.Y. 10462
Filed May 23, 1972, Ser. No. 256,013
Int. Cl. F41g *1/02*
U.S. Cl. 33—233 **1 Claim**



1. A front gun sight for a shotgun comprising a sighting member and attaching means for mounting said sighting member on the shotgun barrel in a plane substantially perpendicular to the axis of said barrel, said sighting member comprising an opaque disc having a cut-out section therein, the cut-out section being substantially cross-shaped, being formed of two rectangles overlapping at right angles, the overlapping area common to both rectangles being approximately half of the area of each rectangle.

3,861,051
ARROW DRAW CHECK FOR ARCHERY BOWS
Gerald I. Killian, 12350 S. E. Stevens Rd., Portland, Oreg. 97266
Filed Nov. 20, 1972, Ser. No. 308,270
Int. Cl. F41g *1/46*
U.S. Cl. 33—265 **2 Claims**

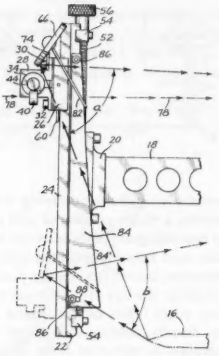
1. In combination with an archery bow sight supported on an elongated base for movement longitudinally thereof, a draw check comprising:

a. a mirror having index means associated therewith,

b. means mounting the mirror for longitudinal movement with said sight along said base and for pivotal movement about an axis generally orthogonal to said base and the

archer's line of sight, the mounting means comprising a support member mounted on said bow sight for movement therewith, and a pivot shaft secured to the mirror and mounted rotatably on the support member, and

c. means interengaging the mirror and base for adjusting the mirror pivotally during said longitudinal movement, to maintain at the eye of an archer the reflected image of a



predetermined point on a drawn arrow in registry with said index means, the interengaging means comprising a cam member mounted on the base and a cam follower member mounted on the shaft for movement with the sight, and securing means releasably connecting the cam follower member to the pivot shaft for relative rotational adjustment.

3,861,052

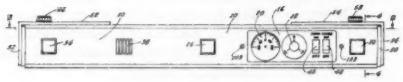
ELECTRONIC LEVEL INSTRUMENT

Joseph H. Siegfried, Riverside, Calif., assignor to Silevco, Inc., Santa Monica, Calif.

Filed Mar. 13, 1972, Ser. No. 233,954

Int. Cl. G01c *9/06*

U.S. Cl. 33—366 **4 Claims**



1. An electronic instrument for indicating the inclination of an axis, said instrument including: an elongated C-channel member; first, second and third electric indicators mounted in said channel member and observable through a side thereof, said first electrical indicator being mounted intermediate the ends of said C-channel member, and said second and third electric indicators comprising indicating lights mounted in positions displaced from the center of said C-channel member towards the respective ends thereof; an electronic circuit unit mounted in said channel member; a battery unit removably mounted in said C-channel member; a switch mounted on said C-channel member and actuable to connect electric circuitry on said electronic circuit unit to a battery in said battery unit; a gear assembly unit mounted in said channel member and including an actuating knob extending through one side of said channel member and a calibrated indicating dial observable through the side of said channel member; a pendulum mounted in said gear assembly unit for pivotal movement around a particular pivot axis; gear means included in said gear assembly unit intercoupling said actuating knob and said calibrated dial and said pendulum to enable said pendulum to be rotated about said pivot axis to selected angular positions indicated by said calibrated dial; first and second electrical contact pins mounted in said gear assembly unit to be selectively engaged by said pendulum; electric circuitry interconnecting said contact pins, said electric circuitry on said electronic circuit, and said electric indicators to cause said first indicator to be energized when the axis of said C-channel member corresponds to the selected angular position of said pendulum, and to cause said second and third indicators to be selectively energized when the inclination of the axis of said C-channel member is greater or less than the selected angular position of said pendulum.

3,861,053

METHOD FOR DRYING AND PRESERVING PLANT MATERIAL

Melvin G. Rovetti, 2094 Willow Pass Rd., Concord, Calif. 94520

Filed Feb. 15, 1973, Ser. No. 332,604

Int. Cl. F26b *3/00*

U.S. Cl. 34—9 **4 Claims**

1. A method of drying and preserving fresh plant and related materials in a dried condition while retaining their natural configurations comprising:

immersing said materials in a dehydrating composition composed of anhydrous borox and silica gel by placing said materials on a layer of said composition and sifting additional portions of said composition around said materials in a manner so as not to substantially deform their configurations;

sealing said materials immersed in said composition from atmospheric moisture for a period sufficient to substantially dehydrate said materials; and

subsequently removing said materials from said composition.

3,861,054

METHOD OF DRYING MATERIALS

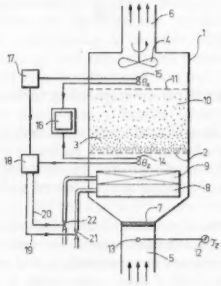
Peter Heinrich Stahl, Freiburg im Breisgau, Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 9, 1972, Ser. No. 304,937

Claims priority, application Switzerland, Nov. 10, 1971, 16512/71

Int. Cl. F26b *3/08*

U.S. Cl. 34—10 **6 Claims**



1. In a method of drying pulverulent or granular feed materials to a predetermined residual water content by causing air to flow past said feed material from input to exhaust, the steps of:

continuously sensing the temperature of the exhaust air;

heating the input air to a first predetermined temperature prior to its introduction into said feed material;

maintaining the temperature of the input air at said first predetermined temperature for a period of time including a period during which the sensed temperature of the exhaust air rises at a low rate, and expiring after the sensed temperature of the exhaust air begins to rise at an increased rate but before the sensed temperature of the exhaust air reaches the mean value of the temperature from which said increased rate rise began and said first predetermined temperature; and

thereafter, reducing the heating temperature of the input air until both the input air temperature and the exhaust air temperature asymptotically approach a second predetermined temperature, being the temperature at which said feed material with said predetermined residual water content is in moisture transfer equilibrium with the air flowing therepast and no further exchange of moisture between said feed material and air occurs.

3,861,055

FLIGHTING FOR DEHYDRATOR DRUM AND METHOD

Stanley P. Thompson, P.O. Box 8073, Topeka, Kans. 66608

Division of Ser. No. 336,445, Feb. 28, 1973, Pat. No. 3,798,789. This application Nov. 28, 1973, Ser. No. 419,537

Int. Cl. F26b *11/04*

U.S. Cl. 34—10 **5 Claims**

1. A method of dehydrating a material in an elongated drying drum having a material inlet and a material outlet, said method comprising the steps of:

providing a drying zone within the drum at a sufficiently elevated temperature to effect removal of moisture from the material;

pneumatically conveying said material from the inlet to the outlet through said zone;

rotating the drum as the material is conveyed therethrough;

regulating the pneumatic conveying medium so that the same is incapable of supporting at least a portion of the material until a portion of the moisture has been removed therefrom whereby a portion of the material gravitates to the outer periphery of said zone;

catching the said portion of the material at the outer periphery of the drying zone defined by the drum;

holding the material previously caught as the drum rotates until the material is at a point circumferentially spaced from the point where the portion was caught and above the center of the zone;

allowing said portion of the material to gravitate toward the center of the zone; catching a second portion of the material as it travels toward the center of the zone;

holding the said second portion of material previously caught as the drum rotates until the material is at a point circumferentially spaced from the point where the said second portion was caught;

forcing said previously caught material either backward or forward toward either said inlet or said outlet while the material is being held; and

allowing said material to gravitate back toward the outer periphery of the zone.

3,861,056

CONTROL DEVICE

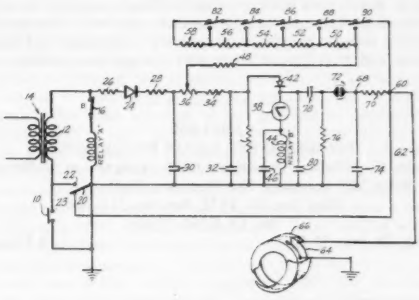
Otto R. Behrens, Skokie, Ill., assignor to Controls Company of America, Melrose Park, Ill.

Continuation of Ser. No. 45,329, July 26, 1960, abandoned. This application Jan. 3, 1972, Ser. No. 215,133

Int. Cl. F26b *19/00*

U.S. Cl. 34—45 **4 Claims**

1. A control for determining moisture content of material, comprising, spaced electrodes adapted to be bridged by a material the resistance of which varies as its moisture content varies, electrical circuit means for supplying said electrodes with an electrical D.C. voltage, a capacitor connected in circuit with the electrodes so the charge thereon will increase as the resistance between the electrodes increases, a solid state switching device having conducting and non-conducting conditions and responsive to a bias signal to switch from one condition to another condition, a neon bulb connected in circuit with said capacitor and responsive to a predetermined charge on the capacitor to produce a bias signal, said solid



state switching device connected in circuit with said neon bulb and operated by the bias signal produced by said neon bulb to switch from one condition to another condition, and control means connected in circuit with said solid state switching device and operated by the change of condition of the switching device for performing a control function.

3,861,057

HEATING APPARATUS FOR MATERIAL IN STRIP FORM

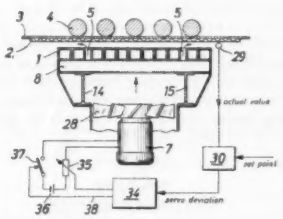
Gerhard Wittstock, Pinneberg, and Walter Hofmeister, Ulzburg, both of Germany, assignors to Werner H.K. Peters Maschinenfabrik G.m.b.H., Hamburg, Germany

Continuation-in-part of Ser. No. 279,022, Aug. 9, 1972, abandoned. This application Oct. 17, 1973, Ser. No. 407,075

Claims priority, application Germany, Apr. 13, 1972, 2217833

Int. Cl. F26b *21/00*

U.S. Cl. 34—54 **6 Claims**



1. Apparatus for drying a web of strip material such as corrugated cardboard having a width comprising, in combination, a heated plate having an upper heating surface over which the web to be dried passes and a width at least as great as the width of said web, passages defined in said plate intersecting said upper heating surface and disposed substantially throughout the width of said web, an energizable source of gaseous cooling medium communicating with said passages, the energizing of said cooling medium source introducing sufficient gaseous cooling medium into said passages to lift the web away from said plate heating surface to cool the web, said heated plate including a lower surface, said passages comprising a plurality of openings defined in said heated plate intersecting said plate upper and lower surfaces, a reservoir chamber defined below said heated plate partially defined by said plate lower surface, said source of cooling medium communicating with said reservoir chamber introducing cooling me-

dium into said chamber upon energization, control means sensing the temperature of said heated web, said control means controlling energization of said cooling medium source, and vertically movable web positioning means disposed above and spaced from said plate heating surface above the web engaging said web in opposed relationship with respect to said plate heating surface tending to maintain the web biased toward said heating surface, said web positioning means being vertically lifted upon the web being lifted away from said plate heated surface by said gaseous cooling medium.

3,861,058

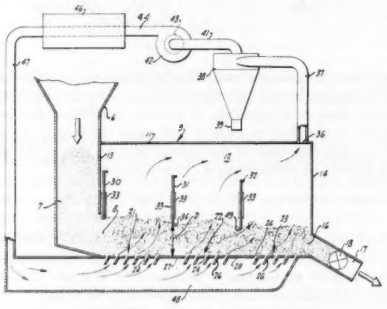
FLUIDIZED BED GRAIN PROCESSOR

John C. Whelan, Woodland, Calif., assignor to California Pellet Mill Company, San Francisco, Calif.

Filed Dec. 18, 1972, Ser. No. 316,114

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 R **8 Claims**



1. A grain processor comprising side, end and top walls partially defining an elongated enclosure; means for supplying untreated grain to one end of said enclosure; means for releasing treated grain from the other end of said enclosure; a stationary bottom wall for said enclosure having disposed therein a plurality of perforated areas spaced by at least one imperforate zone disposed between said ends; means for regulating the average depth of grain above said bottom wall including a vertically moveable weir located above each of said imperforate zones, said weir extending between said side walls and spaced from said top and bottom walls; and means for supplying fluidizing hot air to said enclosure through said perforated areas.

3,861,059

DRYING APPARATUS

Wilhelm Lindemann, Appelhulsen, and Kurt Rosner, Munster, both of Germany, assignors to Hazemag Dr. E. Andreas KG, Munster, Germany

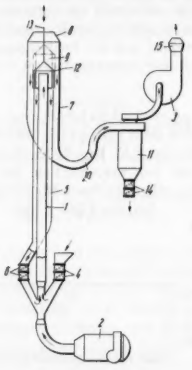
Filed July 2, 197[illegible], Ser. No. 375,924

Claims priority, application Germany, July 3, 1972, 2232611

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 A **6 Claims**

1. In an apparatus for entraining and drying particulate materials including finer and coarser particles, a combination comprising an upright first conduit having a first upper open end and adapted to have hot gas and entrained material to be dried passed therethrough and out of said open end into an upwardly closed chamber; a second conduit surrounding said first conduit with clearance and having a second upper open end communicating with said chamber in the region of said first open end, and a lower end provided with an outlet for the coarser particles; a third conduit surrounding said second circuit with clearance and its wall communicating with the wall of said chamber and serving as the outlet in downward direction for said hot gas; and means for varying the extent to which the level of said second open end is higher than the level



of said first open end, whereby to influence gas and material flow conditions in said chamber, from the first conduit to the third conduit.

3,861,060

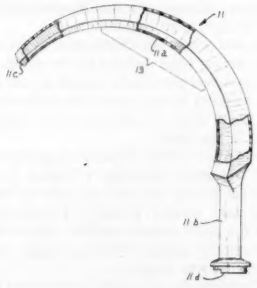
PORTABLE HAIR DRYER

Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Company, Kansas City, Mo.

Filed Feb. 11, 1974, Ser. No. 441,359

Int. Cl. A45d *20/25*

U.S. Cl. 34—97 **3 Claims**



1. In a portable hair dryer, the combination of

a combined blower and heater unit producing a confined stream of heated air at a discharge outlet,

an arched tube having an inlet end, a central portion, side portions extending oppositely from said central portion, said central portion and side portions of a combined length such that when the central portion is above the crown of the head of the user the side portions will extend down the opposite sides of the head, and a hand grip portion formed as a substantially linear continuation of one of said side portions and located between said one side portion and said inlet end, said hand grip portion providing means by which the user can support and manipulate said tube fore and aft, above and behind the head with the center portion generally centered with respect to the fore and aft center plane of the head,

an elongate flexible conduit connecting said inlet end of said tube with said discharge outlet,

said central and side portions of said tube provided with air outlet means along the inter curve thereof whereby to

create an inverse fan-like array of forced, heated air which can be directed inwardly toward the crown and sides of the head of the user and moved fore and aft by fore and aft movement of said tube relative to the head of the user.

3,861,061

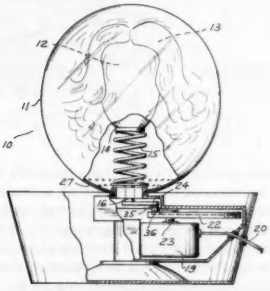
WIG SHAKER

Viola E. Ross, Laurelton, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 15, 1974, Ser. No. 433,542

Int. Cl. F26b *25/00*

U.S. Cl. 34—103 **4 Claims**



1. Apparatus for shaking water out of a wet wig which is placed on the apparatus comprising:

a base on which is mounted a head form of a size to hold a wig, a motor linked to the head form so as to produce reciprocal vibratory motion of the head form in a plane generally perpendicular to the vertical axis of the head form and a covering unit which fastens to the base of the apparatus and is shaped to enclose the head form and an attached wig.

3,861,062

ARRANGEMENT FOR DRYING A FABRIC

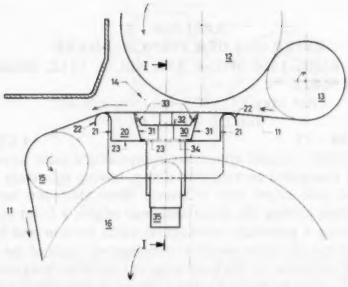
Hans Wymann, Tann-Ruti/ZH, Switzerland, assignor to Ruti Machinery Works Ltd., formerly Caspar Honeggen, Ruti/ZH, Switzerland

Filed June 15, 1972, Ser. No. 263,232

Claims priority, application Switzerland, June 18, 1971, 8917/71

Int. Cl. F26b *13/04*

U.S. Cl. 34—160 **4 Claims**



1. Arrangement for drying a textile material on a weaving machine, wherein the material woven on the machine is in a wet condition before winding onto a cloth beam, characterized in that there is provided an elongated trough-like container having two longitudinal lateral walls that extend the width of the textile material to be dried and in contact with it, the spacing of said lateral walls of said container being at least equal to the width of the textile material to be dried and the material covering substantially all of the open portion of the container, said material being conveyable transversely of the longitudinal direction of the container and over it while being in intimate contact with said longitudinal lateral walls, and the container open towards said material; said container being arranged between two deflecting rollers between which the material is retained in a tensioned condition, the container having free ends attached to end portions of longitudinal lateral walls of said container that extend a short distance in the plane defined by the material between the deflecting rollers so that the material bears on said free ends as it passes over said container; an air chamber positioned longitudinally inside said container, said air chamber formed from a base surface, a cover plate and longitudinal lateral spaced walls, said longitudinal lateral spaced walls extending obliquely away from the base surface, and having side plates secured to said cover plate at their bottom longitudinal edges and extending obliquely upward therefrom, the free edges of the longitudinal lateral spaced walls and the free edges of the side plates secured to the longitudinal edges of the cover plate converge towards their longitudinal edges forming longitudinal air outlet slots, and the spacing of the cover plate and its side plates secured thereto adjustable in relation to said base surface so that the width of the opening of the air outlet slots in said air chamber may be varied; and air feed conduit means operatively connected to said air chamber for supplying drying air thereto.

3,861,063

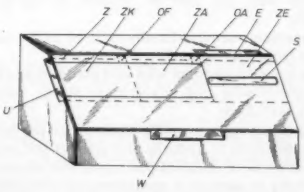
PROGRAMMABLE QUESTION AND ANSWER GAME

Peter Elsner, Forstennieder Allee 227, 8000 Munich 71, Germany

Filed Feb. 15, 1973, Ser. No. 333,126

Claims priority, application Germany, Feb. 22, 1972, 2208352

U.S. Cl. 35—9 R **15 Claims**



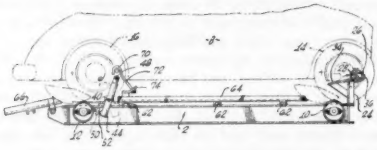
1. A programmable question and answer game for answering random questions, wherein the answer may include *i* elements or digits, comprising a lockable storage receptacle, programmable question data carrier means each of which is provided with at least $i \times n$ markings wherein *i* is said number of answer elements or digits and wherein *n* is a random number, scanning means for sensing said markings on said question data carrier means, answering means, evaluating means arranged for cooperation with said scanning means and with said answering means to compare said $i \times n$ markings of the question data carrier means with said answering means, access means to said storage receptacle operatively connected to said evaluating means for receiving a question data carrier means into said receptacle in response to a correct answer, and means responsive to an incorrect answer for storing an error, said answering means comprising a further scanning means and programmable answer data carrier means each including *i* elements, each of said answer data carrying elements being provided at least with *n* markings whereby $i \times n$ markings on

the question data carrier are correlated with the *n* markings on said *i* number of answer data carrying elements.

3,861,064
APPARATUS SUPPORTING A STATIONARY AUTOMOBILE, FOR DRIVER TRAINING

James L. Sturgeon, 4544 Via de la Plaza, Yorba Linda, Calif. 92686, and Ronald K. Ford, 2438 E. Monroe Ave., Orange, Calif. 92667

Filed Mar. 12, 1973, Ser. No. 340,092
Int. Cl. G09b *9/04*
U.S. Cl. 35—11 7 Claims



1. Driver instruction apparatus for supporting a stationary automobile with a pair of steerable front wheels and a pair of rear wheels at least one of the pairs of wheels being driven wheels, said apparatus comprising:

a platform adapted to rest on the ground and having front and rear ends and ramp means for raising the automobile onto said platform in general alignment and overlying relation therewith;

a single pair of front rollers, each of said front rollers adapted to underlie and engage one of the front wheels of the automobile, thereby to support in part the weight of the automobile, driving motion of the pair of driven wheels of the automobile being transferred to said front rollers;

means connected with said platform for supporting said front rollers for rotation in response to rotation of the driven wheels of the automobile about an axis generally parallel with the axes of rotation of the automobile wheels;

an engagement member fixedly secured to the automobile at the front end thereof;

locating means connected with said platform and releasably engageable with said engagement means, said locating means including;

a supporting surface rigidly mounted on the front end of said platform to underlie and support said engagement member in an installed position of the automobile, and thereby to support a predetermined proportion of the weight of the automobile normally supported by the front wheels;

a guide surface extending rearwardly and downwardly from said supporting surface, said guide surface cooperating with said engagement member and guiding it onto said supporting surface during forward movement of the automobile to said installed position, and

stop means connected with said supporting surface for terminating forward movement of said engagement member as said installed position is reached; and

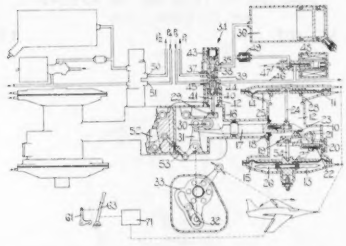
releasable connector means for connecting said locating means with said engagement member to prevent movement of the automobile from said installed position on said platform;

whereby the front wheels of the automobile in said installed position are steerable from side to side, and a simulation of real driving conditions is obtained as the front wheels, carrying only a preselected proportion of their normal load, frictionally engage said driven front rollers to an extent dependent on the steering position of the wheels.

3,861,065
APPARATUS FOR SIMULATING THE EFFECTS OF AERODYNAMIC FORCES ON AIRCRAFT CONTROL

Jerzy Leon Courtenay, Varese, Italy, and Donald Craven, Wolverhampton, England, assignors to Lucas Aerospace Ltd., Birmingham, England

Filed Jan. 8, 1973, Ser. No. 322,188
Int. Cl. G09b *9/08*
U.S. Cl. 35—12 W 16 Claims



1. An apparatus for providing, on a manually operated part of a power driven control for an aircraft, a simulated effect of aerodynamic forces on the aircraft control surfaces, comprising a pair of means for generating respective first and second fluid pressures each of which is dependent on pitot and static air pressures on the aircraft, a first cylinder, first and second pistons slidable in said first cylinder, means for applying said first pressure to a zone within said first cylinder between said first and second pistons, an abutment on one of said pistons and engageable with the other of said pistons, a thrust member coacting with said first piston and providing an output member for the apparatus, a second cylinder aligned with said first cylinder at an end thereof remote from said first piston, a third piston slidable in said second cylinder, means for applying said second pressure to a side of said third piston remote from said second piston, means for applying a third pressure to the sides of said first and second pistons remote from the first pressure, means for applying a fourth pressure to the side of said third piston remote from said second pressure, means coacting with said second and third pistons such that movement of said second piston in response to said third pressure is opposed by movement of the third piston in response to said second pressure, whereby when said third and fourth pressures are lower than said first and second pressures respectively and the resultant pressure force on the second piston is equal to or greater than the resultant pressure force on the third piston, thrust on the output member is derived from the first piston, and when the resultant pressure force on said third piston is greater than that on said first piston said thrust is derived from the third piston.

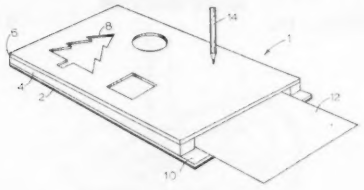
3,861,066
PAPER HOLDER STENCIL BOARD

Irene D. Klaja, 1550 Wilder Ave. Apt. A 1112, Honolulu, Hawaii 96822

Filed May 11, 1973, Ser. No. 359,487
Int. Cl. G09b *11/02*
U.S. Cl. 35—37 4 Claims

1. Children's stencil apparatus comprising a base having a generally elongated rectangular shape, having relatively long front and rear edges and relatively short first and second lateral edges joining the front and rear edges, a front spacer block having a generally rectangular cross section and being elongated in a direction parallel to elongated edges of the base and being mounted on the base adjacent the front longitudinal edge, a rear spacer block having a generally rectangular cross section and being elongated in a direction parallel to the rear edge of the base mounted on the base along the rear edge, a first side spacer block having a generally rectangular cross

section and being elongated in a direction perpendicular to the cross section, and being shorter than the front and rear spacer blocks, the first side spacer block being mounted on the base along the first lateral edge of the base, thereby forming with the front spacer block and the rear spacer block a partially peripherally enclosed area on the base, and a rectangular elongated stencil board comprising a rigid board having rigid interior cut-out portions which are representative of artistic and symbolic articles, the stencil board having a size and shape similar to the base, and the stencil board being mounted on the spacer blocks and being supported above the base over the partially peripherally enclosed area for receiving paper on the area below the stencil board, held by the spacer blocks and inserted through an opening between the stencil board and the base near the second lateral edge of the base,



whereby a pencil may be inserted through the cut-out portions of the stencil board for tracing shape of the cut-out portions on a paper, wherein the front and rear spacer blocks extend from the first lateral edge of the base respectively along the front and rear edges of the base and terminate at positions spaced inward from the second lateral edge of the base, and wherein the stencil board is spaced inward from the second lateral edge, whereby a shelf portion of the base is formed between ends of the spacer blocks and the second lateral edge of the base for receiving paper to be slid onto the partially peripherally enclosed area of the base and for guiding paper into that area, wherein the spacer blocks have substantial and commensurate vertical dimensions, whereby the stencil board is substantially spaced from the base and is parallel to the base for receiving multiple sheets of paper between the stencil board and the base on the partially peripherally enclosed area.

3,861,067

SKI BOOT

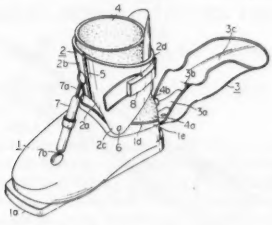
Akira Koyama, Kashiwa, and Yoshinari Mochizuki, Tokyo, both of Japan, assignors to Hope Kabushiki Kaisha, Tokyo-to, Japan

Filed May 14, 1973, Ser. No. 360,011

Claims priority, application Japan, Sept. 28, 1972, 47-96609

Int. Cl. A43b

U.S. Cl. 36—2.5 AL **1 Claim**



1. A ski boot made of a rigid material comprising a boot proper, a generally tubular shaft pivotably connected to said boot proper for receiving the wearer's lower leg portion, said tubular shaft being movable to a fowardly outwardly inclined position relative to said boot proper, means connected between a front portion of said tubular shaft and an upper portion of said boot proper for adjusting forward inclinations of said tubular shaft, said tubular shaft being formed of two hinge portions pivotally connected to each other about a generally vertical pivot remote from a heel of said boot proper, a heel holding member pivotably connected at one end thereof to a rear portion of said boot proper and being disposed inside of a rear portion of said tubular shaft when the wearer's leg is fitted in said tubular shaft, the rear portion of said tubular shaft sliding upwardly along said heel holding member for depressing the wearer's heel forwardly and downwardly when said tubular shaft is moved to the forwardly outwardly inclined position, means for buckling said hinge portion to each other adjacent said heel, and the vertical height of a rear portion of said tubular shaft being substantially lesser than the vertical height of said tubular shaft front portion to thereby facilitate the sliding movement of said tubular shaft relative to said heel holding member.

3,861,068

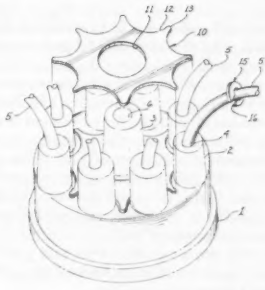
IGNITION CABLE IDENTIFICATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Frank J. Zygmunt, 1125 E. Campbell, Phoenix, Ariz. 85014

Filed Nov. 16, 1973, Ser. No. 416,406

Int. Cl. A44c *3/00*

U.S. Cl. 40—2 **9 Claims**



1. In an internal combustion engine including a distributor cap having a central cone and a plurality of peripherally positioned cones, each of the cones having a socket disposed therein to receive one of a plurality of ignition cables detachably fitted within the sockets, apparatus for coding the ignition cables with their respective sockets, said apparatus comprising in combination:

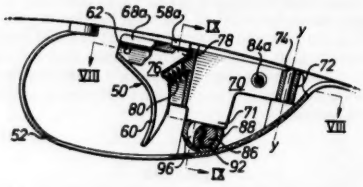
a. a template positionable upon the distributor cap, said template including means for mating with the central cone;

b. orientation means disposed in proximity to the periphery of said template for engaging at least one of the peripheral cones to prevent rotation of said template with respect to the distributor cap;

c. a plurality of unique indicium located upon said template, each said indicium being located in proximity to one of the peripheral cones; to identify the respective cone; and

d. identification means detachably connected to each of the ignition cables for identifying each ignition cable, each of said identification means including indicium corresponding to one of said indicium located upon said template; whereby, said template is positioned on the distributor cap and said identification means is connected to each of the ignition cables such that said indicium of said template and said ignition cables correspond with one another prior to detachment of the ignition cables from the distributor cap to permit subsequent correct reassembly of the ignition cables and the distributor cap by matching said indicium.

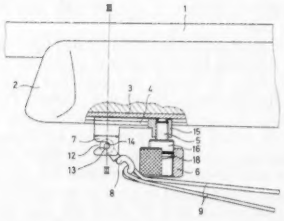
3,861,069
FIRING MECHANISM IN DOUBLE-BARREL GUNS
Olof Torgny Heurlen, Sandasvagen 4, 191 45 Sollentuna, Sweden
Division of Ser. No. 308,250, Nov. 20, 1972, abandoned. This application Mar. 4, 1974, Ser. No. 448,081
Claims priority, application Sweden, June 29, 1972, 8590/72; June 7, 1971, 7388/71
Int. Cl. F41c *27/10, 19/00*
U.S. Cl. 42—1 Y **8 Claims**



1. In a double-barrel gun having a pair of independently and selectively actuated striker mechansims each having a striker associated with a respective one of the barrels, each striker associated with a respective one of the barrels, each striker mechanism including a release element assessable from the underside of the gun and arranged when released to actuate the associated striker, and a single trigger mechanism for alternately actuating said release elements by being movable laterally between the two elements for individually and selectively actuating same, comprising the improvement wherein: said trigger mechanism includes a finger member adapted to be engaged by the finger of a marksman and means mounting said finger member on said gun for movement laterally thereof between first and second operative positions permitting selective and independent actuation of said strikers, said finger member also being positionable in an inoperative position spaced from said first and second positions, said finger member being incapable of activating said release elements when in said inoperative position; and

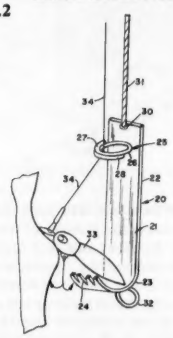
releasable lock means mounted on said gun and coacting with said trigger mechanism for locking said finger member in said inoperative position.

3,861,070
HANDSTOP AND SLING SWIVEL ACCESSORY FOR SPORTING GUNS
Hermann Wild, Ulm/Donau, and Rolf-Dieter Klossika, Neu-Ulm/Donau, both of Germany, assignors to J. G. Anschultz GmbH, Donau, Germany
Filed July 24, 1973, Ser. No. 382,126
Claims priority, application Germany, July 31, 1972, 7228299
Int. Cl. F41c *23/02*
U.S. Cl. 42—85 **8 Claims**



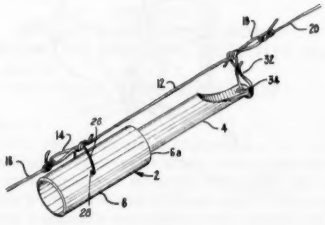
1. An accessory for a gun having a barrel mounted on a stock, comprising a handstop assembly, a sling swivel assembly, means for mounting said handstop assembly and said sling swivel assembly at longitudinal spaced relationship in respect to the gun barrel, said handstop assembly including a threaded receiving member, a bolt threadably engaged with said receiving member and having a head portion, a hand application element having a tubular part engaged over said bolt head portion and being adjustably movable along the axis of said bolt, and clamping means for clamping said hand application member in an adjusted position in respect to the axis of said bolt.

3,861,071
LURE RETRIEVER
Paul Nordhagen, Box 15, Westby, Mont. 59275
Filed Dec. 3, 1973, Ser. No. 421,243
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.2 **3 Claims**



1. A lure retriever comprising a steel strap retriever plate which has a J-shaped edgewise configuration, said J-shaped strap retriever plate having a forwardly curved lower end portion with pointed jaws at the outer end of the curved portion for engagement against a stuck fishing lure, an eyelet mounted to an upper portion of the steel strap retriever plate and projecting forward over the curved portion with said eyelet receiving the fishing line of the stuck lure for guiding the retriever plate to the lure, said strap retriever plate having a bore at its upper end for attachment of a rope to raise and lower the retriever plate along the fishing line.

3,861,072
LUMINESCENT FISHING LURE
Gordon B. Holcombe, 603 Santa Barbara Ave., Millbrae, Calif. 94030
Filed May 29, 1973, Ser. No. 364,748
Int. Cl. A01k *85/00*
U.S. Cl. 43—17.6 **8 Claims**



1. An illuminated fishing lure attachable to a fishing line for attracting fish, squid and other aquatic life comprising:

a chemiluminescent wand having a first chemical in an inner frangible tube and a second chemical in an outer flexible

casing encompassing the inner tube, wherein the chemicals when mixed, by deforming the outer casing and fracturing the inner tube, generate a chemiluminescence;

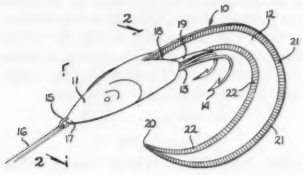
an adjustable, opaque, tubular sheath slidably mounted on the wand and encompassing a portion of the chemiluminescent wand for controlling the effective luminosity of the wand; and

means for attaching the wand and sheath to a fishing line.

3,861,073
FLEXIBLE FISHING LURE

Robert Charles Thomassin, 20, Rue Pasteur, Paris, France

Continuation-in-part of Ser. No. 284,750, Aug. 30, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,649
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.1 **6 Claims**



1. An artificial fishing lure comprising:

a. a flexible elongated member having a body section and a membrane section, said body section being substantially cylindrical and having first and second converging ends, said membrane section being a substantially planar, curved member depending rearwardly from said second converging end, the curvature of said membrane section defining an interior opening in the plane of said membrane section, the terminus of said membrane section being directed in the vicinity of the first converging end of said body section;

b. weighted means for stabilizing the vertical and horizontal orientation of said elongated member, said weighted means being centrally disposed within said body section substantially along the axis thereof; and

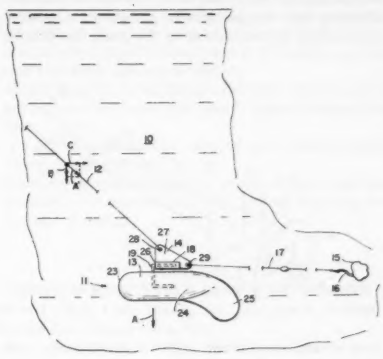
c. a hook having a shanked end and a barbed end, said shanked end being coupled to said weighted means and being partially disposed within said body section and aligned with said weighted means, said barbed end extending from said body section within the interior opening defined by said membrane section.

3,861,074
LIGHTWEIGHT, DEEP-TROLLING RIG FOR FISHING TACKLE

William P. Wood, 5084 Northampton Ct., Newark, Calif. 94560

Filed July 2, 1973, Ser. No. 375,363
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.12 **6 Claims**

1. A deep-trolling rig for use in the line of fishing tackle ahead of the bait thereof comprising a sinker releasably coupled to the line of said fishing tackle by a light-weight link, said sinker comprising an elongated body of high density material including a rigid coupling member comprising a first portion projecting normally from a side surface of said elongated body of high density material at a point substantially aligned with the center of gravity of said sinker and a second portion extending in a direction substantially parallel to the longitudinal axis of said elongated body of high density material; said link comprising a thin-walled receptacle means dimensioned to freely receive said second portion of said rigid coupling member of said sinker and including connecting means for connecting said line of said fishing tackle at the entrance end of

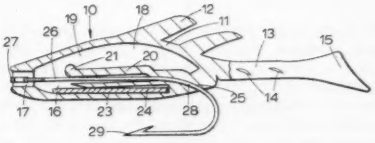


said receptacle means and for connecting said bait of said fishing tackle at the other end of said receptacle means.

3,861,075
FISHING LURES

Alexander John Ingram, 40 Kilm Close, Mevagissey-Cornwall, England

Filed June 12, 1973, Ser. No. 369,150
Claims priority, application Great Britain, Dec. 20, 1972, 58762/72
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.35 **3 Claims**



1. A fishing lure comprising an outer body having a hollow interior including a compartment in which a weight is situated, said compartment being provided in the lower part of said body when said body, in use, is in its normal orientation, said hollow interior having an aperture communicating with the external surface of the lure, a compartment situated in the upper part of said body when said body is in its normal orientation in which, in use, air may be trapped, the bottom surface of said upper compartment having an upstanding lip extending across an open end of said compartment so as to retain the air in said compartment if the lure is inverted from its normal orientation.

3,861,076
BUBBLE MAKER

Irving Starr, 28 Bullitt Park Pl., Columbus, Ohio 43209

Filed Jan. 28, 1974, Ser. No. 437,372
Int. Cl. A63h *33/28*
U.S. Cl. 46—6 **13 Claims**

1. In the combination to form a bubble making apparatus, means forming a duct adapted to convey air from an inlet end to an outlet end and means forming a loop for holding a film of bubble making solution,

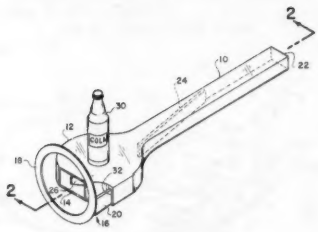
means for attaching said loop means and said duct means together for holding them in operative position,

in operative position said loop means being located whereby air expelled from the outlet end of said duct means passes through the aperture bounded by said loop means,

the improvement comprising:

a relatively rigid support arm flexibly attached to said loop means, the flexible attachment between the arm and loop allowing said support arm to pivot from a position approximately perpendicular to the plane defined by said loop means to a position approximately parallel with said plane, and

means for locking the support arm and loop means in position with the arm approximately perpendicular to the plane defined by said loop means.



3,861,077

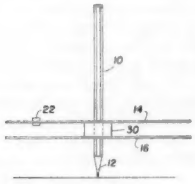
TOY FOR PRODUCING WRITTEN DESIGNS ON PAPER

Robert Lindquist, Burlington, Vt., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Aug. 29, 1973, Ser. No. 392,457

Int. Cl. A63h *1/00*

U.S. Cl. 46—65 **2 Claims**



1. A toy comprising:

a vertical writing instrument having a downwardly disposed writing end;

a hub secured to the instrument in a position above but adjacent the writing end just above the vertical balance point, said hub having upper and lower vertically spaced ends;

a first circular horizontal disc secured to the upper end of the hub and centered on said instrument, said first disc having a radially disposed slot;

a weight slidable in said slot;

means securing said weight to said first disc in any off-center position in said slot; and

a second horizontal circular disc of like dimensions to the first disc, said second disc being secured to the lower end of the hub and centered on said instrument.

3,861,078

CONVERTIBLE DOLL HAVING MIRROR SURFACE CONCEALABLE BY A FACE PORTION

Ruth T. Snyder, 324 Orchard Ave., Sunnyvale, Calif. 94086

Filed Sept. 11, 1972, Ser. No. 288,048

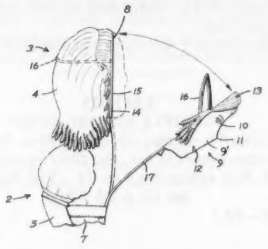
Int. Cl. A63h *3/12*

U.S. Cl. 46—153 **1 Claim**

1. A convertible doll structure comprising:

a. a doll body including a body portion and a head portion attached thereto, said head portion including a front face portion and a flat surface portion, said flat surface portion being formed by slicing away the front face portion; and

b. means including a mirror surface for reflecting light mounted on the flat surface of said head portion;



c. means adapting said face portion to be detachably retained in position to conceal said mirror surface, said face portion being complementary to said flat surface portion, whereby said doll may project a doll face when said face portion is so retained and may reflect the image of a user when said face portion is not so retained.

3,861,079

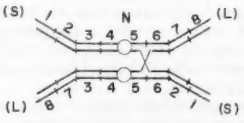
PROCEDURES FOR USE OF GENIC MALE STERILITY IN PRODUCTION OF COMMERCIAL HYBRID MAIZE

Earl Byron Patterson, Urbana, Ill., assignor to University of Illinois Foundation, Urbana, Ill.

Division of Ser. No. 135,873, April 21, 1971, Pat. No. 3,710,511. This application Dec. 18, 1972, Ser. No. 316,358

Int. Cl. A01h *1/02*

U.S. Cl. 47—58 **8 Claims**



1. A maize seed product which upon growth yields a pollen-bearing maize plant essentially incapable of transmitting to progeny, through its pollen, the male fertile allele hereditary factor but-for-which the plant would be incapable of bearing pollen, said seed product being manufactured from progenitor maize stock by manual pollination and confirmation to impart heterozygosity for male sterile and male fertile alleles of a selected male sterile gene locus as well as genetic linkage of said male fertile allele hereditary factor with a differentially transmitted variation of chromosomal constitution.

3,861,080

METHOD AND APPARATUS FOR CLOSING AND OPENING

Elmar Schibli, Niederwil, and Constantin Kentsides, Oberuzwil, both of Switzerland, assignors to Gebrueder Buehler AG, Uzwil, Gallen County, Switzerland

Filed Mar. 19, 1971, Ser. No. 126,099

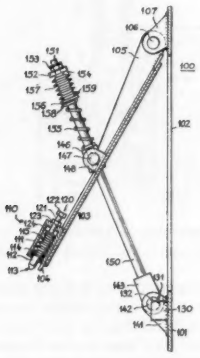
Claims priority, application Switzerland, Mar. 20, 1970, 4233/70; Sept. 7, 1970, 13259/70

Int. Cl. E05f *15/20*

U.S. Cl. 49—31 **6 Claims**

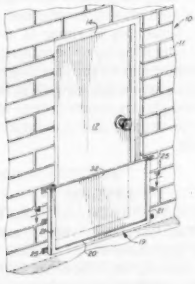
1. An apparatus for closing an aperture, in a rigid machine housing enclosing a space, by utilizing a cover opening under explosive pressure and cooperating with the machine housing, the improvement comprising, in combination, respective structural parts correlated with the boundary of the aperture formed in the machine housing and with the cover; an elastically releasable locking device installed between such respec-

tive structural parts and constructed and arranged so that, responsive to an explosive pressure within the machine housing, the initial restraining force of the locking device is overcome and the cover is abruptly moved from a stable, closed position to a tension-free open position clearing the aperture in the machine housing; said locking device comprising two detent elements elastically displaceable relative to each other; one element being connected with the cover and the counter element being connected with that portion of the machine housing bounding the aperture; the cooperating ends of the



two elements being respectively convex and concave for interengagement with each other; an articulated suspension mounting the cover on the machine housing; a guide sleeve pivotally mounted on the cover between the articulated suspension and the opposite edge of the cover and extending perpendicularly to the articulated suspension; a pull rod slidably engaged in said guide sleeve; a compression spring embracing said pull rod between said guide sleeve and an end plate adjacent one end of said pull rod; and a pivot suspension at the other end of the pull rod mounted on another part delimiting the aperture.

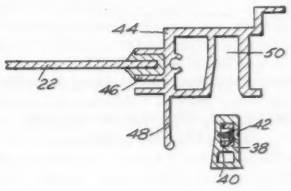
3,861,081
FLOOD BARRIER
Stanley J. Maskell, 30 W. Coolidge Ave., Phoenix, Ariz. 85013
Filed Sept. 20, 1973, Ser. No. 399,000
Int. Cl. E06b *7/00*
U.S. Cl. 49—70 **9 Claims**



1. For use with the doorway formed in the wall of a home, said wall having an outer surface and inner surfaces defining the doorway, together with a door having inner and outer surfaces and movable into open or closed positions relative to said doorway, a flood barrier comprising:

a. a U-shaped channel structure including side legs and a bottom back, the channels of said side legs opening inwardly and the channel of said back opening upwardly;
b. means for permanently mounting said U-shaped channel structure at the lower portion of said doorway;
c. a waterproof panel dimensioned to be snugly received in said U-shaped channel structure;
d. sealing means for creating a watertight seal between edge portions of said panel and said U-shaped channel structure;
e. a filler strip filling the back of said channel structure during periods of non-use, and
f. means for storing said panel in an out of the way protected position, conveniently available to said doorway during periods of non-use.

3,861,082
PIVOTED REMOVABLE SASH TYPE WINDOW
Matthew L. Dau, Long Island, N.Y., assignor to Perfect Seal Window Inc., Ozone Park, N.Y.
Filed Mar. 20, 1973, Ser. No. 342,943
Int. Cl. E05d *15/22*
U.S. Cl. 49—181 **2 Claims**

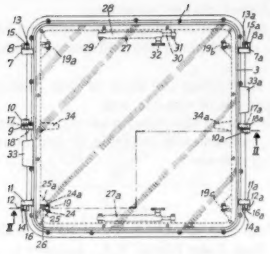


1. A pivoted removable sash window comprising a frame including side jambs, a pair of pivot members slidably mounted in each of said side jambs, a pivot bar attached to each of said pivot members and extending across said frame, said pivot bar and pivot members being slidable as a unit up and down along said side jambs and said pivot members permitting rotation of said pivot bar about its own axis, said window comprising a bottom sash having a recessed portion therein extending completely thereacross, said recess portion being configured so as to frictionally receive said pivot bar therein, whereby said window is removably attached to said pivot bar, and means for releasably latching the upper rail of the window into vertical sliding position in said frame, said recessed portion being of generally U-shaped configuration, said U-shaped configuration being disposed on its side when the window is in vertical position and being inverted when the window is swung to horizontal position, whereby said window may be lifted upwardly off said pivot bar when said window is horizontally disposed.

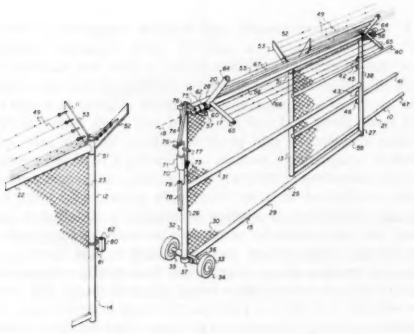
3,861,083
HATCHES FOR USE IN BOATS
Jean R. Goiot, Nantes, France, assignor to Moteurs Goiot, Nantes, France
Filed Dec. 13, 1972, Ser. No. 314,789
Claims priority, application France, Dec. 30, 1971, 71.47631
Int. Cl. E05d *15/50*
U.S. Cl. 49—193 **4 Claims**

1. A hatch assembly in which the hatch can be opened on a selected one of two opposite sides, which comprises a frame, a hatch, and articulation connector means disposed on each of two opposite sides of said hatch to connect same to said frame for pivotal movement relative to the frame about a selected one of two axes each located along a corresponding one of said opposite sides of the hatch, said connector means

including on each side of the hatch at least one pin-bearing lug connected to the hatch received in an open-housing lug connected to the frame, and at least one pin-bearing lug connected to the frame received in an open-housing lug connected to the hatch, the openings of said open-housing lugs connected to the frame and connected to the hatch being oriented to face in respectively opposite directions.

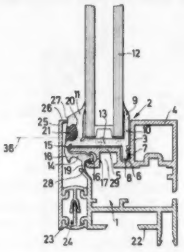


3,861,084
FENCE STRUCTURE
Francis L. Ford, 1110 Raymond Avenue, Fort Pierce, Fla. 33450
Filed Jan. 7, 1974, Ser. No. 431,145
Int. Cl. E05d *13/00*
U.S. Cl. 49—427 **6 Claims**



1. A fence structure that has opposite sides and comprises a pair of upright fence posts that are spaced apart to define an opening through the structure, a gate which is located in a closed position in the opening and horizontally movable to an open position adjacent one of said posts in a vertical plane that is located at one of said sides in parallel with the plane common to said posts, and a barricade to the ascension of said fence structure, said barricade comprising a pair of lateral wire supporting arms which are fixed at the upper ends of the respective posts in a common plane that is inclined to the common plane of said posts, and a lateral wire supporting assembly which is carried by and mounted at the top of said gate for pivotal movement about a horizontal pivot axis between a first position and a second position, said assembly comprising a pair of parallel wire supporting arms which extend through the inclined common plane at said first position and which are located at said one side and below said inclined common plane at said second position.

3,861,085
METAL WINDOW FRAME
Gernot Jacob, Deggendorf, Germany, assignor to Gotz Metallbau GmbH, Deggendorf, Germany
Filed May 3, 1973, Ser. No. 356,838
Claims priority, application Germany, May 8, 1972, 2222520
Int. Cl. E06b *3/00*
U.S. Cl. 49—501 **14 Claims**

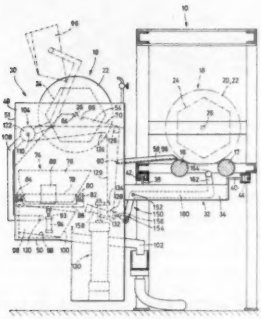


1. A window assembly comprising:
window casing means, said casing means defining a window opening;
a casement frame, said frame being at least in part movable with respect to said casing means and being received in the opening defined thereby, said frame including:
a base portion, said base portion being provided with a first longitudinal slot which faces the window opening; and
a first side portion extending generally outwardly from a first end of said frame base portion;
flexible glazing means, said glazing means being provided with a base portion and a pair of side portions which define a groove for receiving a window pane, said groove facing the window opening, said glazing means further being provided with a first anchoring flange which cooperates with said first longitudinal slot in said casement frame base portion to secure said glazing means to said frame, said glazing means also including a longitudinally extending slot in a first one of said side portions, said glazing means slot facing in a direction generally transverse to said glazing means pane receiving groove and permitting said one side portion to be flexed outwardly to enable insertion of a window pane in said groove, said glazing means further comprising an extension of said base portion which passes around the second end of said casement frame base portion, said second side portion of said glazing means and said first casement frame side portion cooperating to prevent distortion of the second side portion of said glazing means; and
a filler bar complementary in shape to said glazing means slot, said bar being adapted to be inserted and engaged by said glazing means slot to prevent flexing of said glazing means first side portion subsequent to insertion of a window pane in said glazing means groove whereby a window pane may be secured in said casement frame for movement therewith.

3,861,086
DRUM TUMBLING APPARATUS
Manfrid Dreher, Engelsbrand, Germany, assignor to Dr. Ing. Manfrid Dreher KG, Hauptstr., Germany
Filed Apr. 9, 1973, Ser. No. 349,299
Claims priority, application Germany, Apr. 19, 1972, 2219039
Int. Cl. B24b *31/02*
U.S. Cl. 51—164 **11 Claims**

1. In combination with a tumbling installation for polishing and cleaning articles employing a drum comprising a tubular box having an openable cover member in which is received

the articles and polishing media, said box having opposing radially extending coaxially wheel disc side walls and trunnions extending outwardly along the central axis of said side walls, said tumbling installation having a housing for supporting said drum means for rotating said drum about its central axis, apparatus for loading and unloading said drums comprising, a frame spaced in front of said housing, a bridge extending from said frame toward said housing over which said drums are adapted to roll on their wheel disc sides, means mounted



on said frame for receiving said trunnions and supporting said drum to permit said drum to be rotated about its central axis, sieve means mounted on said frame beneath said supported drum for receiving the contents of said drum, and including vibrating means for shaking said sieve, and means for tilting said sieve to remove the contents thereof, a trough for receiving the material passing through said sieve and means connected to said frame for supporting and elevating said trough between a first position beneath said sieve and a second position above said supported drum.

3,861,087

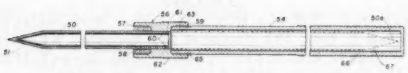
TOOL SHARPENER

Lorin M. Martin, Ogden, Utah, assignor to Fletcher Engineering, Inc., Westminster, Calif., a part interest

Continuation-in-part of Ser. No. 232,777, March 8, 1972, abandoned. This application Aug. 24, 1973, Ser. No. 391,179

Int. Cl. B24d *15/08*

U.S. Cl. 51—205 R **2 Claims**



1. A tool sharpener comprising:

a generally cylindrical elongated sharpening rod;

a coupling sleeve mounted to one end of the sharpening rod and having an outside diameter greater than that of the rod and comprising threaded opposing internal bores within the sleeve of an internal diameter greater than the diameter of the rod, each bore extending inwardly less than half the length of the sleeve; and

a generally hollow handle having an exteriorly threaded cylindrical end capable of threadedly engaging either of the internal bores of the coupling sleeve and of internally accommodating the sharpening rod when coupled with the end of the sleeve from which the rod extends.

3,861,088

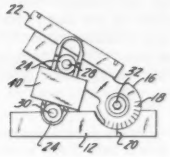
FIXTURE FOR SUPPORTING A TOOL SUBJECT TO GRINDING INCLUDING ACCURATELY POSITIONABLE TILTING ANGLE PLATE

Rocco F. Grieco, 14 Wittkop Pl., Millburn, N.J. 07041

Filed Mar. 14, 1974, Ser. No. 451,063

Int. Cl. B24b *41/06*

U.S. Cl. 51—216 A **2 Claims**



1. A fixture for supporting tool steel to be ground comprising

a. a base plate;

b. a tilting angle plate pivotally secured along an axis at one end thereof to said base plate;

c. locking means for locking said angle plate to said base plate in a fixed angular position;

d. tool-holding means secured to said angle plate;

e. a pair of cylindrical measuring rolls secured respectively to said base and angle plates equidistant from said axis, said measuring rolls touching each other when the angle between said angle plate and said base plate is zero, and

f. spacer support means, said spacer support means comprising a slotted guide member positioned wherein said measuring rolls fit within a longitudinal slot in said spacer support means, said slotted guide member providing support for spacer blocks placed between said measuring rolls.

3,861,089

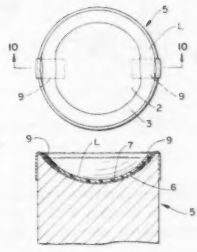
METHOD OF MAKING CONTACT LENS

Robert C. England, 423 W. Main, Bellevue, Ohio 44811

Filed Sept. 24, 1973, Ser. No. 400,154

Int. Cl. B24b *13/02*

U.S. Cl. 51—284 **8 Claims**



1. The method of grinding a contact lens of resilient self-restoring material and having front and rear faces, respectively, and having on its rear face a base curve of prescribed

configuration surrounded by a peripheral annular curve which is generally spherical and which has a radius of curvature longer than the radius of curvature of the base curve, and of which the outermost peripheral edge of the peripheral annular curve is substantially circular, comprising:

warping one or more areas of the peripheral curve portion of the lens into a condition in which the shape of the projection of the outermost peripheral edge of the peripheral curve on a plane perpendicular to the axis of the lens is out-of-round, by the application to one or more areas of the front face of the lens, which areas are aligned axially of the lens with the peripheral curve, of extraneous forces directed generally perpendicular to said front face at their points of application, while leaving the entire peripheral edge of the lens unconstrained radially of the lens axis;

securing the lens fixedly in said warped condition;

then, while the lens is held firmly in said warped condition, applying a rotary spherical faced grinding tool to said rear face of the lens only on said peripheral curve with the rotary axis of the tool in substantially coaxial relation to the visual axis of the lens and, while leaving the base curve intact, grinding only the peripheral curve to a predetermined degree such that the warped portion of the peripheral curve is spherical in the warped condition and the lens material is removed from the peripheral curve to the greatest width and depth at the shortest radius of said projection and such that the width and depth of removal of material at the different circumferential portions of the peripheral curve is inversely proportional to the length of their radii, respectively; and

then releasing the lens and permitting it to selfrestore to its original unwarped condition; whereby the base curve retains its prescribed contour and the peripheral curve is torically contoured.

3,861,090

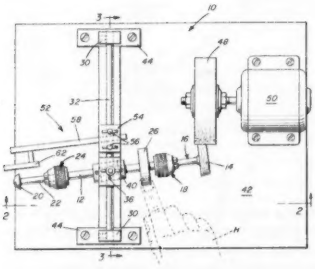
METHOD OF USING A LAPIDARY MACHINE

Alphonse J. Lattauzio, 4125 Hookheath Dr., El Paso, Tex. 79922, and Claude W. Bowlin, P.O. Box 156, Fairacres, N. Mex. 88033

Filed Aug. 3, 1973, Ser. No. 385,476

Int. Cl. B24b *1/00, 9/16, 19/08, 19/22*

U.S. Cl. 51—229 **1 Claim**



1. A method for shaping gemstones comprising the steps of:

a. placing a template in contact with a grinding wheel and locking against translational movement an element holding the template;

b. removing the template from adjacent the grinding wheel and placing the template on the locked holding element at a position spaced from the grining wheel;

c. placing a guide plate in contact with the template and retaining the guide plate against movement;

d. releasing the locked holding element and permitting movement of same toward and away from the grinding wheel and the retained guide plate; and

e. setting a stone to be shaped in step (a) position of the template.

3,861,091

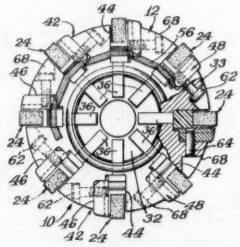
HONING TOOL WITH GUIDE MEANS TO PREVENT TOOL WEAR

Clarence A. McDonald, Richmond, Ind., assignor to National Automatic Tool Company, Richmond, Ind.

Filed Feb. 5, 1973, Ser. No. 329,855

Int. Cl. B24b *33/08*

U.S. Cl. 51—331 **10 Claims**



1. An internal honing tool comprising, in combination, a tool body having an outer periphery and a plurality of spaced recesses in said tool body, said recesses having first and second portions and extending through said outer periphery, abrasive means mounted in each of said first portions and said recesses and extending outwardly at least slightly beyond said outer periphery for internally honing a work piece, means mounted in each of said second portions of each of said recesses for guiding each of said abrasive means for radial movement during a honing operation, said guiding means and said abrasive means cooperating to define means for undergoing thrust wear, caused by reciprocal motion of said tool, and for undergoing torque wear, caused by rotary motion of said tool, said cooperating means including interengaging portions on said guiding means and on said abrasive means for substantially preventing axial movement between said guiding means and said abrasive means, and said guiding means also defining means projecting at least slightly beyond said outer periphery for undergoing outside diameter wear, said thrust wear, torque wear and outside diameter wear normally being encountered by said tool body during a honing operation, all of said undergoing means avoiding such wearing on said tool body, and means for removably securing each set of said abrasive means and said guiding means in each of said recesses of said tool body.

3,861,092

MOLDED STORAGE HOUSING FOR A MOTORCYCLE

William L. Dale, 103 Merewood Dr., Versailles, Ky. 40383; William G. Britsch, 613 Wichita Dr., and Charles E. O'Dell, 333 Harvard Dr., both of Lexington, Ky. 40503

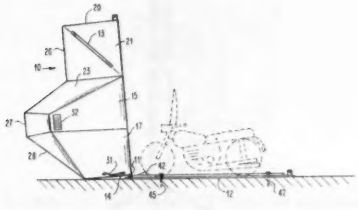
Filed May 31, 1973, Ser. No. 365,481

Int. Cl. E04b *7/16*

U.S. Cl. 52—66 **4 Claims**

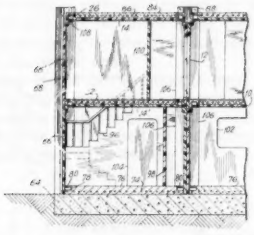
1. A molded storage housing for a motorcycle comprising, a floor plate adapted to support the motorcycle thereon and having a forward end and a rearward end, and a rigid single unit plastic cover member fixedly hinged to the rearward end of said plate and movable between a first stabilized elevated position with the rear wall of the cover member resting on the ground and a second lowered position with the periphery of the cover member in contact with said plate, said cover member having a juxtaposed pair of sloping side wall portions spaced from each other relatively far apart for enclosing the handlebar and windshield portions of the motorcycle, a relatively narrow sloping rear wall enclosing the front wheel por-

tion of the motorcycle, a relatively narrow sloping front wall enclosing the rear wheel portion of the motorcycle, intermediate sloping panels joining said rear wall and said side walls, intermediate sloping panels joining said front wall and said side walls, and top panels joining the top edges of said side walls, said intermediate walls and said rear and front walls;



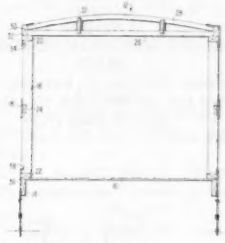
thus forming a configuration of said cover member such that when the cover member is in said second position, the motorcycle is totally enclosed by the cover member without requiring modification and when the cover member is in said first position the motorcycle may be driven upon said floor plate prior to dismounting of the driver therefrom.

3,861,093
MODULAR BUILDING CONSTRUCTION
Steven Robinson, 1 W. 67th St., New York, N.Y. 10023
Filed Apr. 24, 1973, Ser. No. 354,021
Int. Cl. E04b *1/348*
U.S. Cl. 52—79 **21 Claims**



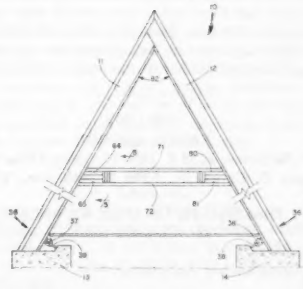
1. A modular building construction comprising a plurality of shell modules in contiguous side-by-side and overlapping relation, each of said shell modules having a top wall and side wall portions, the bottom of said modules being essentially open, said side wall portions being formed to define at least two corner wall portions positioned for registration with corresponding corner wall portions of other contiguous shell modules and each having an outer surface, said corner wall portions being shaped to define a space between the outer surface thereof and a projection of the adjacent side wall portions so that the combined spaces defined by the aligned corner wall portions and contiguous modules defines a vertical column, said top wall being formed with upwardly extending circumferential projections except in the region of said corner wall portions, each of said circumferential projections having an outer side wall spaced inwardly from the outer surface of said side wall portions to define a seat for the receipt of the lower peripheral edges of side wall portions of shell modules positioned above said top wall portion; and poured-in-place concrete in said vertical columns, and in the region on the upper surface of said top wall between said projections including the region of said corner wall portions.

3,861,094
BUILDING STRUCTURE HAVING UNITIZED JOINT AND CONNECTOR STRAP THEREFOR
John Calvin Jureit, Coral Gables, and Carlos S. Rionda, Miami, both of Fla., assignors to Automated Building Component Inc., Miami, Fla.
Filed May 9, 1973, Ser. No. 358,488
Int. Cl. E04b *1/348*
U.S. Cl. 52—86 **14 Claims**



1. A building structure comprising a truss including upper and lower chords, means for joining the ends of the chords one to the other, a generally vertically extending side wall frame including a plurality of studs joined at opposite ends to upper and lower plates, means for joining one end of said truss to said frame with said lower chord resting on said upper plate including an elongated sheet metal strap having first and second groups of elongated nail-like teeth struck from respective opposite end portions of the strap to project to one side thereof, said strap being applied to said joint along the outer surfaces of said frame and said truss with the first group of teeth at one end of the strap being embedded into the frame and the second group of teeth at the opposite end of the strap being embedded into said truss whereby said strap interconnects said truss and said frame to reinforce the truss and frame against relative separating movement and to form a substantial unitary joint therebetween, said first group of teeth being embedded into the outer edge of one of the studs of the frame.

3,861,095
METHOD AND APPARATUS OF BUILDING CONSTRUCTION
Herbert E. Eoxworthy, 11932 Forest La., Carmel, Ind. 46032
Filed Jan. 28, 1974, Ser. No. 437,232
Int. Cl. E04b *1/48*
U.S. Cl. 52—90 **8 Claims**



1. A building structure comprising:
a first main wall including a first pair of spaced apart parallel walls and a second pair of spaced apart parallel walls; said first pair of walls including insulation therebetween, said second pair of walls including insulation therebe-

tween with said second pair of walls being aligned with said first pair of walls;

a tongue assembly fitted into and securing said first pair and said second pair together, said tongue assembly including a projection extending outwardly of said first pair and said second pair and forming a seat, said tongue assembly including a plate through which said projection extends, said plate being slidably fitted into and securing said first pair and said second pair together; and,

a floor mounted upon said seat.

3,861,096

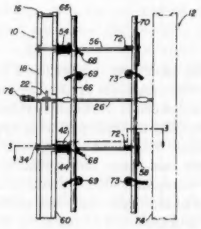
SPACED BAR FOR CONCRETE REINFORCING STEEL MATS

Harold R. Emmons, 501 Oak St., Lebanon, Ohio 45036

Filed Jan. 26, 1973, Ser. No. 326,684

Int. Cl. E04b *1/00*

U.S. Cl. 52—98 **8 Claims**



1. A spacer bar for maintaining a reinforcing means at a predetermined, substantially fixed distance from the inside surface of a first wall form of a pair of spaced first and second wall forms, said first wall form having slots therein and reinforcing ribs on the outside surface thereof; said spacer bar comprising:

a rod member having first and second end portions

said first end portion having rib engaging means;

said second end portion having a flange member secured thereto to facilitate securing said reinforcing means to said spacer bar;

said rib engaging means being dimensioned to pass through one of said slots and, by manual rotation of said rod member, engage one of said ribs to enable an unassisted operator to install said spacer bar from the inside surface of said first wall form; and

spring means including compression spring means mounted on said rod member which contacts said inside surface of said first wall form and is compressed when said rib engaging means passes through one of said slots thereby to resiliently urge said rib engaging means against said one of said ribs and hold said spacer on said form.

3,861,097

EARTH ANCHOR

Merle W. Patterson, 2635 E. 28th St., Tulsa, Okla. 74114, and Lawrence C. Caves, Jr., 5309 S. 30th Ave., Tulsa, Okla. 74107

Filed Sept. 24, 1973, Ser. No. 400,015

Int. Cl. E02d *5/80*

U.S. Cl. 52—98 **11 Claims**

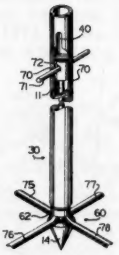
1. A ground anchor comprising:

a rod;

a pointed tip at an end of said rod to facilitate driving said rod into the ground;

a tapered shoulder on said rod; a sleeve of length substantially less than said rod, locateable on said rod whereby an end of said sleeve engages said shoulder,

said sleeve being longitudinally scored along at least two paths from said shoulder engaging end to enable said sleeve to be flared along a portion of its length upon being driven into said shoulder whereby said shoulder is constrained by said flared sleeve from upward movement; and



a separate and removable driving tube fitable over said rod for driving said rod into the ground prior to the location of said sleeve on said rod, said driving tube being fitable over said rod again subsequent to the location of said sleeve on said rod to engage said sleeve and transmit a driving force to flare said sleeve.

3,861,098

SPACER DISK FOR THE PRODUCTION OF A FLOOR COVERING

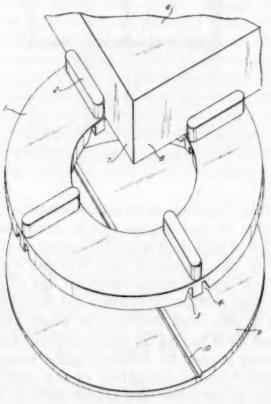
Karl Schaub, Lupineweg 7, 3501 Niedenstein, Germany

Continuation of Ser. No. 160,597, July 8, 1971, abandoned. This application Oct. 4, 1973, Ser. No. 403,627

Claims priority, application Germany, July 10, 1970, 2034331

Int. Cl. E04b *5/43*

U.S. Cl. 52—98 **8 Claims**



1. A spacer for the laying of construction plates on a rigid base, comprising

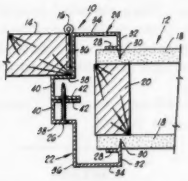
a spacer disk having an upper surface and a lower surface and formed with radially running raised portions arranged on said upper surface thereof and defining a joint width of said plates, said spacer disk being of ring form, having a center opening and being formed in said lower surface in a region thereof lying and following opposite to said raised portions, respectively, with two linearly running recesses extending across the width of said ring form.

3,861,099

TWO PIECE WALL FRAME FOR AN OPENING THEREIN

Stan A. Faudree, 1500 A. Exchange, Oklahoma City, Okla. 73108

Filed June 25, 1973, Ser. No. 373,424
Int. Cl. E06b 1/18, 1/30
U.S. Cl. 52—211 10 Claims



1. An improved two-piece wall frame for disposition in a wall opening in secure engagement with the untrimmed wall, the improvement comprising:

a first elongated unitary casing member having a side casing panel substantially perpendicular to said wall and including plural fastening means for embedded engagement in the wall, a front casing panel integrally connected to said side casing panel and substantially parallel to said wall, a jamb casing panel integrally connected to said front casing panel and substantially perpendicular to said wall, a front stop casing panel integrally connected to said jamb casing panel and substantially paralllel to said wall, a side stop casing panel integrally connected to said front stop casing panel and substantially perpendicular to said wall, and a rear stop casing panel integrally connected to said guide stop casing panel and substantially parallel to said wall;

a second elongated unitary casing member being of generally similar cross-section to said first elongated casing member and in embedded engagement with the opposite side of said wall in mirror image position to said first elongated casing member with said rear stop casing panels in abuttment; and

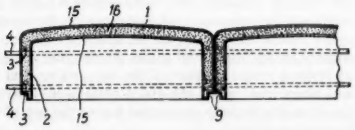
a securing means for insertion through said first casing member front stop panel and rear stop panel for rigid fastening to said second casing member rear stop panel to rigidly affix said first and second casing members in embedded engagement with the wall.

3,861,100

BUILDING MEMBER

Albert Fatosme, 14, rue des Terrasses, 14 000 Caen, and Henri Coste, 8, Avenue Bertie Albrecht, Paris 8eme, France

Filed Jan. 2, 1973, Ser. No. 320,002
Claims priority, application France, Jan. 14, 1972, 72.01214
Int. Cl. E04c 1/24
U.S. Cl. 52—227 12 Claims



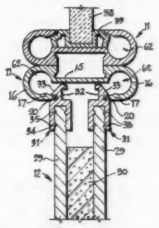
1. A building component formed by a plurality of adjacent monobloc members, each of said monobloc members comprising a bottom wall of generally rectangular shape, a sidewall integrally formed with and extending downwardly from and continuously along the length of each edge of said bottom wall below said bottom wall and defining an open central area between the sidewalls, the height of each said sidewall being less than that of the length or width of said bottom wall, a bore formed in each of said sidewalls and totally surrounded thereby, each of said bores extending longitudinally of its respective sidewall for the entire length thereof, the bores of two transverse sidewalls of a member which intersect being spaced apart one above the other, tie means in said bores extending the length and width of the component and aligning the corresponding sidewalls of adjacent members which extend in the same direction, and means engaging said tie means for holding said plurality of members under compression with the sidewalls thereof in juxtaposed relationship to form a two dimensional array, the sidewalls of juxtaposed members extending in the same direction forming a beam.

3,861,101

FABRICATED PARTITIONS

Hubert James Whisson, 86 King William Rd., Hyde Park, Australia (5061)

Filed Mar. 9, 1973, Ser. No. 339,908
Claims priority, application Australia, Mar. 13, 1972, 8248/72
Int. Cl. E04b 2/74
U.S. Cl. 52—238 4 Claims



1. A fabricated partition having spaced parallel upright members and panels extending therebetween,

each upright member having a web flanked on each side with a return portion terminating in a lip, the lips extending towards one another but being spaced apart and cooperating with the web to form a channel shaped cross section,

each panel comprising a pair of spaced panel skins, a pair of spaced parallel edge members extending along each of the two vertical edges of the panel, each edge member being a metal member secured to a respective panel skin edge and having a ramp face extending along its outer surface and an outwardly facing recess in its outer surface,

and resilient means separating respective pairs of edge members, so constructed and arranged that the edge members of each pair may be moved towards one another by deforming said resilient means, positioned with the recesses aligned with the lips of an upright member, and when released urged into firm engagement with the lips by the resilience of said resilient means.

3,861,102

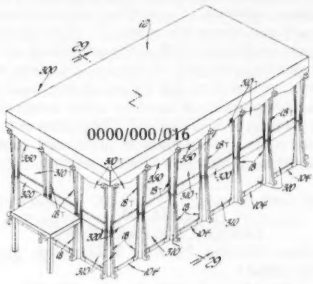
BUILDING STRUCTURE

John S. Hodge, 2350 Westridge Ct., Ferndale, Mich. 48220

Filed Mar. 12, 1973, Ser. No. 340,595
Int. Cl. E04b 2/72
U.S. Cl. 52—236 28 Claims

1. A building structure, comprising a plurality of generally vertically extending spaced column members, groove-like recess means formed in said column members and extending generally longitudinally thereof, said groovelike recess means being inclined with respect to the vertical, and a plurality of

wall panel members separate from said column members, said plurality of wall panel members being adapted to be respectively received between said spaced column members and at least partly received within said groove-like recess means



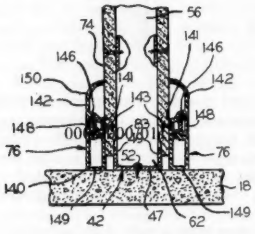
formed in said column members to thereby define at least a segment of a wall assembly supported by said column members, said wall panel members comprising side edges which are also inclined with respect to the vertical in a manner as to be complementary to the angle of said recess means.

3,861,103

PARTITIONING ARRANGEMENT FOR HIGH RISE BUILDINGS

Robert R. Rasmussen, 1120 Grandview Ln., Lake Forest, Ill. 60045

Filed Mar. 2, 1973, Ser. No. 337,598
Int. Cl. E04b *2/74*
U.S. Cl. 52—241 **13 Claims**



1. A partition arrangement for forming a wall in a building structure defining a room space having a floor and ceiling, said partition arrangement comprising:

floor and ceiling runners of generally channel shape respectively secured to the floor and ceiling respectively in substantial coplanar opposed relation,

a pair of side runners respectively mounted between the ends of the respective floor and ceiling runners adjacent the ends of the latter,

and a partition framework between said runners in close interfitting relation thereto and resting on said floor runner,

said framework being free of fixed connection to said runners,

and trim strip means positioned along the vertical and horizontal edges of said framework on at least one side of same for masking said runners,

whereby said runners are free to shift with the building structure relative to said framework to accommodate flexture movements in the building structure,

said partition framework comprising:

a plurality of vertically extending studs positioned between said floor and ceiling runners and having their ends received therein,

and wallboard sheeting mounted on said studs at said one side of said framework in fixed relation to said studs and masking same,

said studs being free of columnar supporting engagement with said ceiling runner,

said wallboard sheeting at said runners being received in close fitting relation thereto,

with the trim strip means along said side runners being applied to said sheeting,

said side runners being mounted in abutting relation with vertical walls of the building structure adjacent same,

said trim strip means along said side runners defining a gap between same and said building structure vertical walls, respectively,

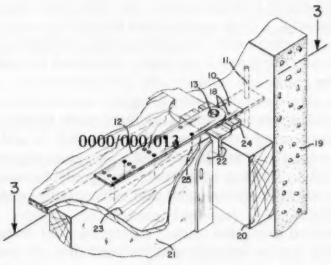
and resilient caulking compound means filling said gaps along the lengths thereof.

3,861,104

PIVOTED WALL ANCHOR DEVICE

Warren H. Bower, Buena Park, Calif., assignor to Beven-Herron, Inc., La Mirada, Calif.

Filed Sept. 24, 1973, Ser. No. 399,992
Int. Cl. E04b *1/41, 5/00*
U.S. Cl. 52—283 **1 Claim**



1. In combination;

a. a roof framing member;

b. a concrete wall having one side intercepted by said framing member;

c. an anchor plate terminating at one end in anchor means embedded in said concrete wall so that its other end extends a given distance from said one side of the wall at a location corresonding to the point the top of the roof framing member intercepts the wall;

d. a flat securing bar of length six to eight times its width pivoted at one end to the extending end of the anchor plate so that the free end of the bar can swing in a horizontal plane, said bar having a series of nail holes each of diameter no greater than one-eighth the width of the bar, and in a given pattern spaced at least one-fourth said width on either side of the longitudinal center line of the bar, and longitudinally spaced apart a distance between one and one-fourth times the width of the bar, and additional nail holes on the longitudinal center line of the bar between the mid point of the bar and its free end, whereby, if the top of the roof framing member does not intercept the concrete wall at the precise horizontal position of the anchor plate, the securing bar may be pivoted slightly in an horizontal plane so that the member will underlie a major portion of the bar and so that suitable nail holes making up the given pattern may be selected for receiving nails to secure the bar to the top of the roof framing member;

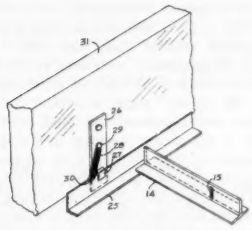
e. a ledger board; and

f. a spacer block, said anchor plate including means in its extending end for enabling securement of the device to said leger board with said spacer block thereunder for proper vertical positioning of the anchor plate relative to the contemplated vertical location of the top of said roof framing member.

3,861,105
HANGERS FOR SUSPENDED CEILING STRUCTURES

Charles V. Starks, 3217 - 18th Ave., Rock Island, Ill. 61201

Filed May 4, 1973, Ser. No. 357,257
Int. Cl. E04b 5/54
U.S. Cl. 52—484 4 Claims



1. A ceiling construction comprising:

a piece of sheet material having an upper portion and a lower end, said upper portion being fastened against the side of a floor joist, and said lower end having a short distance of extension below the bottom of the joist;

a tension spring affixed at one end to said upper portion on the side of said piece of sheet material opposite the side adjacent to the floor joist, said tension spring being secured at its other end to the upper edge of an angular runner, said runner supporting ceiling panels thereon;

said spring urging the angular runner to which it is fastened upwardly to position the upper edge of the angular runner against said lower end of said piece of sheet material, said short distance of extension being only so large as to allow said lower end to hold the angular runner suspended no further than one inch below the bottom of the joist whereby the ceiling panels are supported close to the floor joist;

said spring being stretchable to allow manual depression of the angular runner to a distance of three inches from the bottom of the floor joist thereby enabling replacement of ceiling panels.

3,861,106
COUPLING STRUCTURE FOR COOPERATION WITH A MEMBER ANCHORED IN A STONE PART

Dieter Erhart, Memmingerberg, Germany, assignor to Mannesmann-Leichtbau GmbH. Munich. Germany

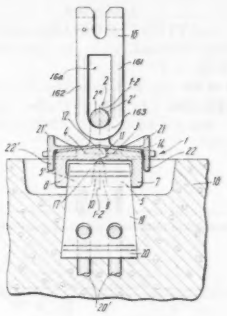
Filed Feb. 25, 1974, Ser. No. 445,600
Claims priority, application Germany, Feb. 28, 1973, 2309877
Int. Cl. E02d 5/76
U.S. Cl. 52—587 9 Claims

1. Equipment for coupling a shackle-like carrier with an elongated eye to the head of a member anchored in a piece of stone such as concrete or the like, wherein the head projects above the stone and is defined by two oppositely directed ridges of V shaped cross-section each, comprising:

a biparted assembly which includes a biparted eye and a biparted plate, with partitioning along a plane transverse to the center axis of the eye, the eye being linked to the shackle;

each part of the biparted plate having gripping jaws for gripping under and receiving a portion of the head;

the part of the biparted being movable with movement of the parts of the eye in the shackle-like carrier to separate the parts of the biparted plate for a distance to permit alignment of the head, the assembly when having its parts placed in abutment along the plane gripping the head by means of the jaws of each of the plate parts; and

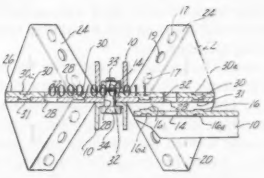


releasable means for holding the parts of the biparted assembly in said abutment and preventing separation.

3,861,107
CONNECTING FIXTURE ASSEMBLY FOR SPACE FRAME SYSTEM

Hristo V. Papayoti, Ann Arbor, Mich., assignor to Unistrut Corporation, Wayne, Mich.

Filed May 24, 1973, Ser. No. 363,368
Int. Cl. E04h 12/10
U.S. Cl. 52—650 17 Claims



1. A space frame system framework comprising a plurality of elongated stress and load transmitting struts interconnected by stress and load distributing fixtures to define upper and lower grid like chord frame structures disposed in spaced parallel planes; a plurality of elongated stress and load transmitting struts, each connected respectively with the fixtures of the upper and lower chord frame structures; means for fastening said struts to said fixtures, said frame work further comprising a double deck arrangement of said chord frames wherein there is an uppermost and a lowermost chord frame and a common intermediate chord frame between the two, said fixtures in said intermediate chord frame comprising an upper and a lower connecting fixture, each having alternate angularly and horizontally disposed strut attachment faces, each of said horizontally disposed faces in one of said fixtures having a plurality of through holes radially thereon, said other fixture plate having on each of its horizontally disposed faces an alternating arrangement of lugs and holes in opposed relationship with said through holes of the other fixture, with the lugs of one of said fixtures received in the aligning through holes in the other of said fixtures, said fixture with said through holes having a base of thickness approximately twice the thickness of said lugs of said other fixture whereby when said lugs are disposed in said through holes, recesses are formed on the base of said fixture opposite said lugs, said struts comprising in each case a member having an attachment end portion having alternately disposed through holes and lugs engageable with the outer sides of the back-to-back horizontally disposed faces of said fixture with the lugs of said struts

receivable in said recesses to provide a rigid connecting fixture assembly.

3,861,108

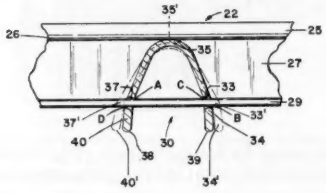
SLATTED FLOOR ASSEMBLY

Jack E. Hartman, Holland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Continuation of Ser. No. 175,555, Aug. 27, 1971, abandoned. This application Apr. 18, 1973, Ser. No. 352,096

Int. Cl. E04c *2/42;* **E04f** *19/10*

U.S. Cl. 52—667 **6 Claims**



1. A slatted floor assembly including means for securely holding parallel flooring slats at predetermined spaced intervals, said assembly comprising:

a plurality of flooring slats each having an elongated, narrow, supporting member the upper surface of which defines the supporting floor formed by the assembly and a downwardly depending mounting flange, said mounting flange comprising an upright leg joined to and extending along said supporting member at a lower surface thereof and a base segment extending transverse to said leg and coupled to said leg at an end of said leg remote from said supporting member; and

spacing means for securing said slats at predetermined, spaced intervals with respect to each other, said spacing means comprising a plurality of spaced channel members each having resilient side walls which include a plurality of apertures formed therethrough, said apertures spaced at predetermined intervals along the longitudinal dimension of said walls and shaped to allow said flooring slat mounting flange to be inserted through aligned apertures of adjacent channel members orthogonal to the longitudinal axis of said channel members when said resilient side walls are resiliently deflected, said side walls including a wall portion immediately adjacent said apertures which engages said mounting flanges of said slats and said lower surface of said supporting member to securely hold said flooring slats in said channel members when said walls are released.

3,861,109

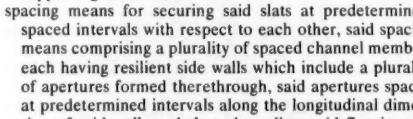
CONTINUOUS SHEAR RESISTANT TIMBER GIRDER

Robert Hunt, Barrington, R.I., and Paul S. Crandall, Concord, Mass., assignors to Gerrity Company, Inc., Boston, Mass.

Filed Dec. 19, 1973, Ser. No. 425,964

Int. Cl. E04c *3/16*

U.S. Cl. 52—693 **7 Claims**



1. An improved open box-type timber girder of the class employed in framing a building structure, being formed of an elongated length for spanning an open extended space in the building structure and for receiving load forces and containing shear and bending stresses without significant deformation, said timber girder comprising a light-weight body fabricated from dimension lumber components and plywood, said fabricated girder body including upper and lower dimension lumber flange members arranged flatwise one above another, vertically disposed spacing studs solidly secured between the flanges at separated points therealong, a plurality of sets of plywood webs solidly secured at opposite sides of the flange members in staggered overlapping relation to the vertical studs, said sets of webs having projecting edges which extend beyond adjacent vertical studs, said sets of plywood webs occurring in longitudinally separated relationship along the girder body to define a plurality of access openings through which may be received pipes, electrical conduits and other service lines, stress transmitting stud members extending across each of the access openings in a diagonally disposed position, opposite ends of each stud member being rigidly fastened between the said projecting members of adjacent sets of plywood webs, and said stress transmitting studs being of a length to extend from the bottom of a vertical stud in one set of webs to the top of a vertical stud in an adjacent set of webs to provide trussed corner sections in the girder at each access opening.

3,861,110

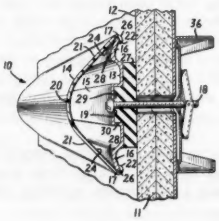
BUMPER GUARD

Gary F. Bartlett, Muncy, Pa., assignor to Construction Specialties, Inc., Cranford, N.J.

Continuation of Ser. No. 300,735, Oct. 25, 1972, abandoned. This application Mar. 19, 1974, Ser. No. 452,513

Int. Cl. E04f *19/02*

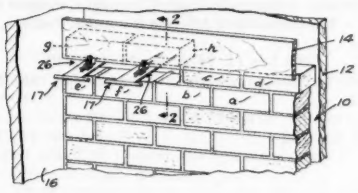
U.S. Cl. 52—718 **11 Claims**



1. A bumper guard for mounting on a wall or other generally vertical surface to protect such surface from impact, comprising an elongated, continuous, substantially rigid retainer having in cross-section a medial portion and a pair of terminal retainer flanges extending from either edge of the medial portion, mounting means for affixing the retainer to the protected surface and for locating an outer free edge of each retainer flange at a predetermined distance from the protected surface, and an elongated continuous impact-absorbing bumper member formed of a tough, resilient, impact-resistent, synthetic polymeric material received on the retainer and having in cross-section a generally outwardly convex medial portion and a pair of divergent leg portions extending from the medial portion and defining an interior angle of substantially less than 180°, the free end of each leg portion having an inturned edge forming an elongated continuous inwardly open channel, each channel being normally received by the outer free edge of one of the terminal retainer flanges releasably to retain the bumper member on the retainer, the interior angle of the bumper member as formed being slightly less than the angle thereof when installed on the retainer whereby an initial force normally to retain the bumper member in place on the retainer results from the inherent resiliency of the bumper material, the medial portion of the bumper being substantially spaced from the medial portion of the retainer and being spaced at the greatest distance from the

protected surface of any part of the bumper member such that impacts on the bumper member are normally on said medial portion thereby to permit deflection of the bumper member medial portion on impact and absorption of the energy of the impact by resilient deformation of the energy bumper member by substantial spreading of the legs thereof by a camming action of the retainer flanges, and (1) the angle between each leg of the bumper member and the protected surface under all degrees of deformation and deflection of such leg and (2) the spacing from the protected surface of a point or zone of contact between such leg and the corresponding retainer flange being so related as to preclude the edges of the legs from contacting the protected surface for any extent and direction of deformation and deflection of the bumper member upon impact.

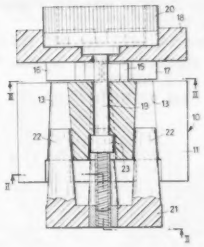
3,861,111
BRICK LAYING DEVICE
Will Park McLeod, 16515 Baylis Ave., Detroit, Mich. 48221
Filed Oct. 19, 1973, Ser. No. 407,851
Int. Cl. E04f *21/20*; **E04g** *21/22*
U.S. Cl. 52—749 **3 Claims**



1. A device for facilitating laying the top course of bricks which are disposed between a frieze board and a vertical wall surface behind the frieze board and in which the frieze board overlaps the front faces of the bricks in said top course comprising, a rigid brick support member in the form of a flat plate having a handle portion at one end and having a pair of laterally spaced pointed projections extending from the end of said plate opposite said handle, said pointed projections being adapted to engage and be supported by the vertical wall surface behind a brick wall being erected, said device also having secured thereto intermediate the ends of said plate at least one pointed projection mounted on said plate and projecting horizontally in the same direction as said spaced projections in a plane above said plate, said last-mentioned pointed projection being adapted to engage with the frieze board spaced outwardly from said vertical wall surface and being adjustable on said plate to vary the distance between the pointed end thereof and the pointed ends of said spaced projections, said first and second mentioned projections being engageable with said wall surface and frieze board, respectively, to support a brick on said brick support member in an elevated position up behind the frieze board while the next to the top course of bricks is laid therebelow, after which the device is adapted to be disengaged from said wall surface and frieze board to lower the bricks held in an elevated position to complete said top course.

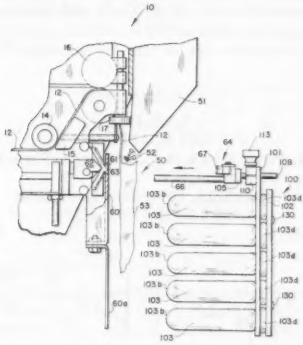
3,861,112
PANEL ASSEMBLING AND FASTENING DEVICE
Danilo Caroselli, Milan, Italy, assignor to Tapira Establishment, Triesen, Liechtenstein
Filed Mar. 20, 1974, Ser. No. 453,157
Claims priority, application Italy, Mar. 22, 1973, 21942/73
Int. Cl. F16b *5/06*
U.S. Cl. 52—758 D **7 Claims**

1. A device for grasping the edges of a plurality of elements having at least one dimension which is much greater than the others, such as slabs, tubes and the like in order to interconnect them, characterized by comprising a body in which there are formed a plurality of housings adapted to receive, each, a terminal portion of an element in the vicinity of said housings there being formed in the body tapered seats having a radial



cut substantially in correspondence with a geometric generating line, an element carrying pins which are correspondingly tapered and are slidably housed in said seatings, said latter element being connected to said body by means of a screw connection whose axis is parallel to the axis of said seatings.

3,861,113
PACKAGING APPARATUS AND METHOD
H. Hampton Loughry, Aurora, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio
Filed June 29, 1973, Ser. No. 374,902
Int. Cl. B65b *31/00*
U.S. Cl. 53—22 B **17 Claims**



17. A method of expelling excess air from a loaded flexible wall container comprising the steps of:

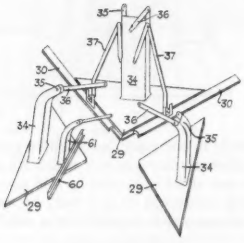
a. providing a pair of members which are movable toward and away from each other with at least one of the members carrying a plurality of resilient portions projecting toward the other member, each of which portions is deformable independently of the other portions;
b. positioning a loaded flexible wall container between said members;
c. moving said members relatively toward each other to compress the container between said portions and the other said member;
d. conforming at least one loaded portion of the container to the contents while displacing air from said one loaded portion by engaging and resiliently deforming at least one of said resilient portions against said container portion while relatively moving said members; and,
e. collapsing an unloaded container portion to displace air therefrom by engaging and resiliently deforming at least

another of said resilient portions against said unloaded container portion while moving said members.

3,861,114
METHOD OF PACKAGING

Henry Jason, and Christopher Richard Eddison, both of Watford, England, assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed Dec. 14, 1972, Ser. No. 314,908
Claims priority, application Great Britain, Nov. 16, 1971, 53209/71; May 3, 1972, 20594/72
Int. Cl. B65b *11/02*
U.S. Cl. 53—33 **6 Claims**

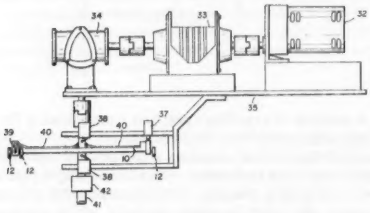


1. In the method of wrapping an article with a wrapping foil the improvement which comprises locating a sheet of wrapping foil adjacent the article, moving the article relative to the sheet, contacting the wrapping foil with the article, draping the foil around the article, first smoothing the foil around the article inwardly from four positions equispaced about the article towards the centre of the article and thereafter bunching the remaining pleats of foil into four bunched ribs, each extending from the edge of the article toward a common point.

3,861,115
BOX FLAPPER

Anthony R. Peres, Bristol, N.Y., assignor to Press Electronic Machines, Inc., Bristol, N.Y.

Filed Jan. 23, 1974, Ser. No. 435,880
Int. Cl. B65b *57/02, 43/39*
U.S. Cl. 53—76 **21 Claims**



1. A box flapper for positioning a transverse flap on each of a succession of boxes, said box flapper comprising:

a. means for spacing said boxes apart as said boxes move through a flapping region;

b. means for fully opening the main side flaps of said boxes as said boxes move through said flapping region;

c. a horizontally rotatable arm arranged alongside the path of travel of said boxes through said flapping region;

d. said arm having a rest position approximately parallel with said path and an operating position transverse to said path;

e. each end of said arm having flap engaging means;

f. a motor;

g. a solenoid-controlled clutch and brake driven by said motor and selectively transmitting said motor drive to said arm;

h. means for detecting the approach of said transverse flap of one of said boxes to said flapping region;

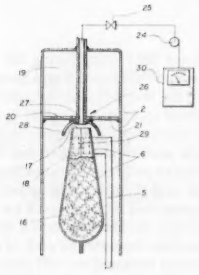
i. means responsive to said approach detecting means for operating said solenoid-controlled clutch and brake to rotate said arm approximately 90° in an arc curving in the general direction of motion of said one box to said transverse position of said arm where said flap engaging means of said arm overtakes, engages, and positions said transverse flap of said one box; and

j. means for operating said solenoid-controlled clutch and brake after said positioning of said transverse flap to rotate said arm approximately 90° in an arc in the general direction of movement of said one box to return said arm to said rest position.

3,861,116
APPARATUS FOR DETERMINING THE OXYGEN CONTENT OF FILLED PACKAGING CONTAINERS

Klaus Domke, Stuttgart-Weilimdorf, Germany, assignor to Fr. Hesser Maschinenfabrik AG, Bad Cannstatt, Postfach, Germany

Filed July 11, 1973, Ser. No. 378,070
Claims priority, application Germany, July 15, 1972, 2234914
Int. Cl. B65b *31/04*
U.S. Cl. 53—110 **5 Claims**



1. In an automatic packaging machine for providing controlled atmosphere content packages and having a plurality of work stations for filling the packages:

conveyor means for moving said packages along the work stations;

gas carrying cover means over the path of said packages between the work stations, said cover means being constructed and arranged to receive and distribute an inert or protective gas;

gas analyzer means including an indicating instrument for determining the gaseous content of said packages;

a stationary suction tube connected to said gas analyzer means and extending into said cover;

a controllable valve connected between said suction tube and said indicating instrument;

a pump interposed between said valve and said indicating instrument;

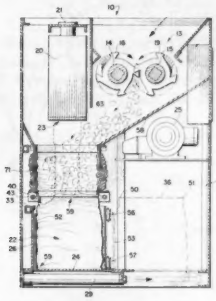
a gas-deflecting member arranged on said suction tube proximate to the terminal end thereof for enveloping the unsealed ends, or openings, of said packages;

said tube being effective to draw gas from within and around the unsealed openings of said packages.

3,861,117
REFUSE DISPOSAL APPARATUS

Quinto DeFilippi, 21 Chauncey Ave., Toronto, Ontario, Canada

Filed May 21, 1973, Ser. No. 362,960
Claims priority, application Canada, May 30, 1972, 143398
Int. Cl. B65b *1/24*
U.S. Cl. 53—124 B 10 Claims



1. Refuse shredding and packing apparatus comprising in combination;

hopper means having a refuse receiving opening from an upper side thereof;

at least one shaft member having teeth thereon, rotatable within said hopper means;

wall means forming a bottom wall and side walls defining a compacting chamber, disposed at a lower level than said hopper means and having an open side;

means adapted to position an envelope within said chamber for reception of refuse therein, said envelope being supported against the weight of said refuse by said bottom wall and side walls lying around the exterior thereof;

means adapted to direct shredded refuse from said hopper means into a said envelope in said compacting chamber; refuse packing means reciprocally moveable into and out of said envelope against said bottom wall of said compacting chamber for forcing refuse into said envelope, said envelope being extended against said bottom wall and said side walls of said chamber by refuse as the same is being compacted;

power means for rotating said shaft and for reciprocating said packing means, and,

sealing means operable to close and seal said envelope around said compacted refuse.

3,861,118
METHOD AND EQUIPMENT FOR SEALING THE CAP OF BOTTLES

Kikuo Muto, Kawasaki City, Japan, assignor to Gunze Kobunshi Kogyo Co. Ltd., Isehara City, Kanagawa Prefecture, Japan

Filed Nov. 28, 1973, Ser. No. 419,488
Int. Cl. B67b *5/02*, *5/00*
U.S. Cl. 53—167 3 Claims

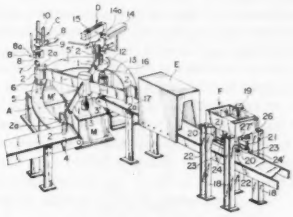
1. An apparatus for cap-sealing the necks of bottles, comprising:

a bottle moving device for moving and guiding bottles to be cap-sealed;

a bottle sliding surface over which the bottles to be moved and guided by said bottle moving device can slide and operatively positioned therefor;

a bonding agent applying device for applying bonding agent to the necks of the bottles, and a top plate placing device for placing top plates one by one onto the tops of the bottles, said bonding agent applying device and said top plate placing device being located at a first position along said bottle sliding surface;

a cap-sealing material feeding device positioned at a second position along said bottle sliding surface for furnishing to and covering, one by one, the necks of the bottles, to which bonding agent has been applied and onto which the top plate has been placed, a flattened tubular cap-sealing material made of heat-contracting synthetic resin;



a conveyor at the end of said bottle sliding surface;

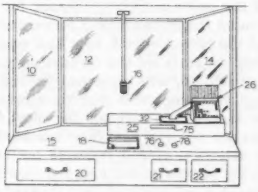
a furnace located at a first position along said conveyor for thermally contracting the cap-sealing material covering the neck of the bottles; and

a twisting device located at a second position along said conveyor for twisting and rolling under pressure the necks of the bottles cap-sealed by heat contraction.

3,861,119
DRIVE-IN BANK TELLER OPERATING SYSTEM AND MECHANISM

Regin B. Taggart, 16 Avalon Dr., Snyder, N.Y. 14226

Filed Jan. 25, 1974, Ser. No. 436,607
Int. Cl. B65b *9/06*
U.S. Cl. 53—180 10 Claims



1. A semi-automatic banking system comprising in combination;

A. a powered conveyance for transfer of customer deposit and return items between relatively remote teller-access and customer-access positions; operation of said conveyance being under control of the teller;

B. a teller-assist mechanism located at the teller's work station and including a hopper into which the teller may cause customer return items to be deposited, a powered packaging device including means for presenting open packets in series under said hopper to receive such return items and then under control of the teller to provide a separate sealed packet for each batch of such return items so deposited by the teller and to advance each such separately sealed packet to a point of delivery to said conveyance while advancing another open packet into receiving position under said hopper;

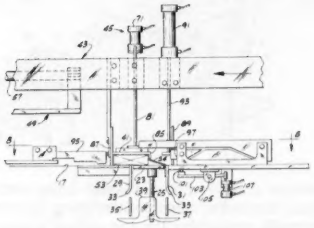
C. a first power control system enabling the teller to selectively operate said conveyance to move between teller-access and customer-access positions; and

D. a second power control system enabling the teller to initiate an automatic return item packaging and delivery sequence of operations by said system following deposit of customer return items to said hopper.

3,861,120
WRAPPING APPARATUS

John S. Gordon, Kohler, Wis., assignor to Hayssen Manufacturing Co., Sheboygan, Wis.

Filed May 4, 1973, Ser. No. 357,363
Int. Cl. B65b *11/22*
U.S. Cl. 53—230 10 Claims



1. Apparatus for wrapping units to be wrapped comprising fixed rearward and forward table members having an opening therebetween, an elevator movable from a lowered position below said table members to a raised position generally flush with said table members, said elevator being adapted to move a unit upwardly through said opening with a sheet of wrapping material on top of the unit, said sheet being larger than the top of the unit and having rearward and forward portions extending beyond the unit a sufficient distance for folding of said portions around the rearward and forward sides of the unit and around the bottom of the unit, said portions becoming folded around the rearward and forward sides of the unit with extensions of said portions projecting beyond the bottom of the unit, and means operable with the elevator in its raised position for moving said unit and the sheet first rearwardly over the elevator and over said fixed rearward table member to fold the extension of said rearward portion of the sheet underneath the bottom of the unit and then forwardly back over said elevator and over said fixed forward member to fold the extension of said forward portion of the sheet underneath the bottom of the unit.

3,861,121
ARTICLE PACKAGING APPARATUS

Claude E. Monsees, Durham, N.C., assignor to Wright Machinery Company, Inc., Durham, N.C.

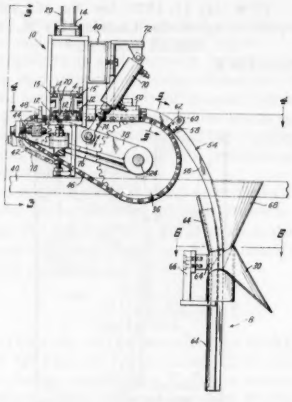
Filed Aug. 1, 1973, Ser. No. 384,444
Int. Cl. B65b *35/24*, *39/00*
U.S. Cl. 53—239 6 Claims

1. In combination with a cyclically operable package filling machine having a filling station defined by a generally tubular chute for receiving sequential charges of product and directing the same into successive packages;

a conveyor arranged to transport discrete articles, other than said product, to a position adjacent said filling station;

transfer means movable transversely of said conveyor in timed relation to the cyclic operation of said filling machine for engaging articles on said conveyor and moving them laterally therefrom; and

a trackway arranged to receive articles moved from said conveyor by said transfer means and extending into and along at least a portion of said tubular chute to slidably

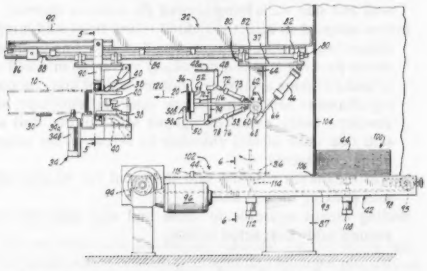


guide said articles into the path of movement of said product.

3,861,122
CARTON END-CLOSING APPARATUS

Duane A. Boltz, East Brunswick, N.J., and James J. Gardner, Hamilton, Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed June 14, 1973, Ser. No. 369,796
Int. Cl. B65b *7/28*
U.S. Cl. 53—296 8 Claims



1. In apparatus for closing an open end of a carton by inserting therein a boot piece, in combination,

a. means for advancing an open-ended carton to a locality for inserting a boot piece into the open carton end;

b. means for inserting a boot piece into an open end of a carton at said locality, said inserting means comprising

i. a suction head for releasably holding a boot piece in position for insertion into a carton end with edge portions of the boot piece projecting laterally beyond the head, and

ii. means for moving the head along a defined path between a retracted position away from said locality and an extended position in which the head, holding a boot piece, is inserted within an open end of a carton at said locality;

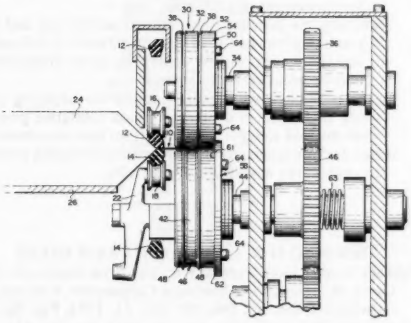
c. fixed guide means disposed along said path for engaging and bending projecting edge portions of a boot piece held by said head as said head advances in said path past said guide means toward its extended position, to fold said edge portions for insertion into a carton end;

d. means for securing, in a carton end, a boot piece inserted therein by said head;
e. means for delivering to said head a foldable boot piece blank in unfolded condition to be held by said head by suction; and
f. means for folding a boot piece blank held by said head, to form a boot piece having edge portions projecting laterally beyond the head, prior to advance of said head past said guide means.

3,861,123
BAG CLOSURE APPARATUS

William H. Eburn, Jr., 107 Hills Point Rd., and Charles T. Raymond, 15 Covelee Dr., both of Westport, Conn. 06880

Filed July 24, 1972, Ser. No. 274,471
Int. Cl. B65b *7/08*
U.S. Cl. 53—372 **7 Claims**

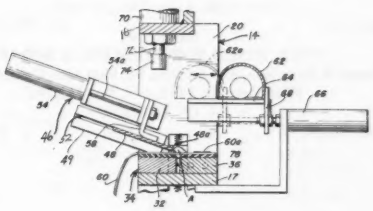


1. In apparatus for closing the open end of a filled bag including opposed gripping means for engaging the sheet material comprising the end section of a bag at a location inwardly from the end edge thereof to hold the layers of sheet material comprising the end section of the bag in closed, face-to-face relation substantially in a plane, the improvement comprising, in combination:
A. a pair of juxtaposed creasing means positioned to engage between them the end section of a bag held by said gripping means;
B. means for moving said gripping means linearly and continuously to move the end section of a bag, substantially in the plane of the end section and substantially parallel with the edge thereof, between said creasing means;
C. one of said creasing means providing a pair of spaced, parallel grooves extending in the direction of linear movement of the end section of a bag held and advanced by said gripping means;
D. the other of said creasing means providing ribs aligned with and projecting into said grooves for engaging and creasing the end section of a bag along spaced, parallel lines during movement thereof between said creasing means;
E. first folding means positioned in the path of movement of the creased end section of a bag for folding the end section upon itself about the crease closest the end edge thereof; and
F. second folding means positioned downstream from said first folding means for folding the folded end section in the same direction upon itself about the other crease; each of said folding means comprising:
i. first and second folding members having adjacent, spaced surfaces defining therebetween a slot having an upstream end section located in the path of movement of the end section of a bag held and advanced by said gripping means, said members having generally planar guide surfaces for engaging a portion of the end section adjacent the portion to be folded;
a. said planar surface of said first member terminating in a linear edge located in alignment with one of said ribs and grooves and the direction of movement of a bag end section, and defining the edge of a first helical folding surface, the latter facing in the same direction as said guide surface at the upstream end of said first member and gradually rotating through 180° about said edge to face in the opposite direction at the downstream end of said first member;
b. said second member including a second helical surface located in spaced, face-to-face relation with said first helical surface to form a helical slot for engaging the end portion of the end section of a bag to fold the end section upon itself at a crease therein; and
c. one of each pair of folding members being mounted in substantially fixed position, and the other member of the pair being mounted for simultaneous rotary and linear movement relative to and apart from the member with which it is associated.

3,861,124
AUTOMATIC BAG CLOSURE AND SEALING APPARATUS

Len Bentzien, Menomonee Falls, Wis., assignor to Universal Foods Corporation, Milwaukee, Wis.

Filed Feb. 22, 1973, Ser. No. 334,553
Int. Cl. B65b *7/08, 51/14*
U.S. Cl. 53—373 **5 Claims**

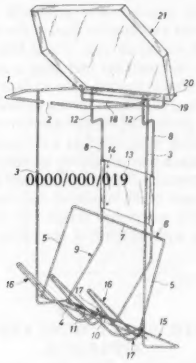


1. An apparatus for closing and sealing bags which comprises:
a. a supporting frame having an inverted, U-shaped configuration and having a generally horizontal cross support member and side leg elements depending from the ends thereof;
b. a folding means mounted on said supporting frame comprising a pair of power driven jaws mounted between said leg elements parallel to and below the cross support;
c. a bag securing and folding bar slidably mounted on the frame in cooperating relation with the folding means, said folding bar being slidably mounted to reciprocate between a point within the jaws of the folding means and a point removed therefrom;
d. a heating means mounted on said frame adapted to direct heat to a predetermined portion of a bag held on the folding means; and
e. means for applying pressure to the folding means when in a closed, bag securing position.

3,861,125
BAG DISPENSING RACK

Per Juel Hagemeister, Vallensbaekvej 18, 2600 Glostrup, Denmark

Filed Feb. 13, 1974, Ser. No. 442,148
Int. Cl. B65b *67/12*
U.S. Cl. 53—390 9 Claims

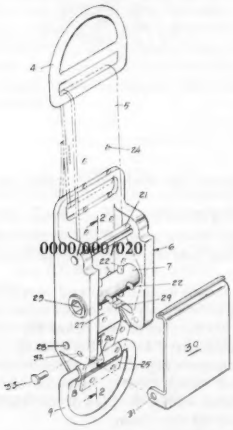


1. Bag dispensing apparatus comprising an open horizontal frame for holding open the mouth of a bag, front vertical bars suspended from said open frame, a horizontal bar on said vertical bars below said frame, inclined members extending rearwardly from said horizontal bar and constituting a bed for a roll of sequentially connected bags, rear vertical bars depending from said frame, and a further horizontal bar supported on said rear bars in spaced parallel relation with the first said horizontal bar to form a slot above said bed through which bags from the roll can be passed.

3,861,126
CINCH WINCH FOR SADDLING A HORSE

Neolan V. Morrison, 326 Addison St., Palo Alto, Calif. 94301

Filed Dec. 10, 1973, Ser. No. 423,201
Int. Cl. B68c *1/00*
U.S. Cl. 54—23 3 Claims

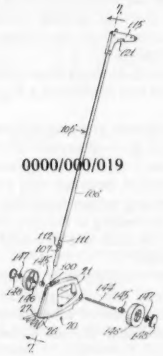


1. A device for use in positioning a saddle on a horse comprising:
- a housing positioned on one side of the body of said horse adjacent to said saddle;
- a longitudinal strap, the first end of which is fixedly positioned on a first end of said housing and the second end of which is disposed for freely passing through a second end of said housing;
- said strap being further disposed for passing through a saddle ring fixedly positioned on said saddle;
- said strap being characterized by a plurality of holes therethru positioned along its length;
- a roller positioned upon said housing in rotating relation therewith;
- said roller being characterized by a plurality of protruding axial teeth disposed around its periphery;
- said teeth being further disposed to engage said holes in said strap;
- a hook fixedly positioned on said second end of said housing;
- said hook being disposed for engagement with a cinch ring connecting to an underbelly strap on said horse;
- means for rotating said roller thereby causing said teeth to cause movement of said strap,
  - whereby the distance between said saddle ring and said cinch ring may be varied and the pressure of said saddle and the tension of said underbelly strap on said horse may be adjusted simultaneously;
- means positioned within said housing for engaging positively said teeth in a predetermined rotatative position whereby said roller is restricted from free movement;
- means for disengaging said teeth from said rotative position to enable free movement of said roller.

3,861,127
HOUSING FOR A PORTABLE GRASS SHEAR

Mikelis Ritums, Lake Geneva, Wis., and Alvin Romin, Jr., Oak Lawn, Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Division of Ser. No. 296,740, Oct. 11, 1972, Pat. No. 3,805,385. This application Jan. 18, 1974, Ser. No. 434,547
Int. Cl. A01d *55/00*
U.S. Cl. 56—246 3 Claims



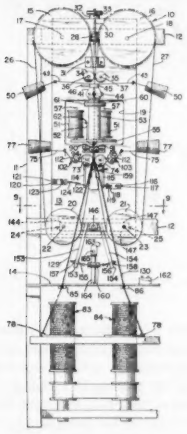
1. A housing for a portable, hand-held, electrically driven grass cutting device having means for converting the device to a wheel-supported device by the addition of an axle and wheel assembly, said means comprising portions of said housing having relatively thin-walled, external sections with integral inwardly projecting cylindrical wall portions positioned immediately behind said thin-walled sections whereby said thin-walled sections may be easily ruptured to receive an axle and said cylindrical wall portions provide bearing support for said axle.

3,861,128

CHENILLE YARN-PRODUCING MACHINE

Robert Chase Whitaker, North Wales, Pa., assignor to Providence Pile Fabric Corp., Fall River, Mass.

Filed Sept. 11, 1972, Ser. No. 288,008
Int. Cl. D02g *3/00, 3/34*
U.S. Cl. 57—24 9 Claims



1. In a machine for the production of chenille yarn including a pair of traveling forming tapes, means for maintaining said tapes in face-to-face juxtaposed positions during a portion of their travel, means for forming wrappings of effect yarn on said juxtaposed tapes, a pair of compression rolls having opposed peripheral surface portions defining a nip through which said wrapped tapes pass, and a blade having a cutting edge to sever the wrappings as the wrapped tapes pass through said nip, the improvement comprising means for adjusting the positions of said compression rolls, said means for adjusting the position of said compression rolls comprising a bracket individual to each roll supporting the roll for rotation thereon, means supporting each bracket for rocking movement to move said rolls towards and away from each other, means for adjusting the bracket supporting one of said rolls to a determined rocked position and maintaining it in such position, and means for urging rocking movement of the other bracket to press the roll supported thereby toward said one roll.

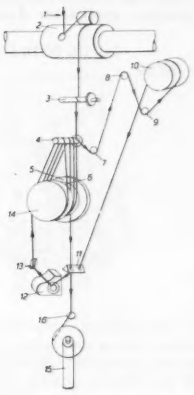
3,861,129

PRODUCTION OF TEXTURISED YARN

Werner Doschko, Nuuloch am Leaimbach, Germany, assignor to Imperial Chemical Industries Limited, London, England

Filed July 2, 1973, Ser. No. 375,937
Claims priority, application Great Britain, July 13, 1972, 32812/72
Int. Cl. D02g *1/02;* D01h *1/28*
U.S. Cl. 57—34 HS 11 Claims

1. A process for the production of texturised yarn wherein thermoplastic synthetic yarn is sequentially stretched and texturised comprising stretching yarn between a feed means and a draw roll and texturising the drawn yarn by the friction false twist principle wherein the draw roll is also the feed means for and controls the tension of the yarn in the texturising zone characterised in that the yarn passes a plurality of times from the draw roll to a separator roll before reaching the heater of the texturising zone and the separator roll acts as a



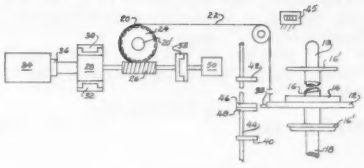
twist damming element which substantially prevents the twist inserted by the texturising unit running back to the draw roll.

3,861,130

AUXILIARY RING RAIL POSITIONING MEANS FOR TEXTILE TWISTER OR LIKE MACHINE

Michael A. Vidler, Greenville, S.C., assignor to Saco-Lowell Corporation, Greenville, S.C.

Filed Oct. 24, 1973, Ser. No. 409,218
Int. Cl. D01h *9/14;* B65h *54/28*
U.S. Cl. 57—54 6 Claims



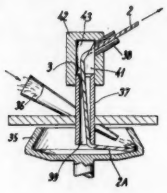
1. In a textile yarn twister or like machine adapted during normal operation to collect yarn for packages and during doffing to have empty package members substituted for full packages thereon, said machine having a builder mechanism, a ring rail reciprocatorily movable by said builder mechanism along a vertical path of travel during normal operation of said machine and adapted to be positioned preparatory to doffing of said machine at a preselected doffing position along said path of travel, and full package detecting means for detecting a full package condition at said machine, the improvement comprising:

auxiliary ring rail positioning means for, in automatic response to each detection by said detecting means of a full package condition, rapidly and unidirectionally moving said ring rail to said preselected doffing position from the particular random position occupied by said ring rail upon said detection of said full package condition by said detecting means, said auxiliary means moving said ring rail downwardly to said preselected doffing position when said random ring rail position is thereabove and moving said ring rail upwardly to said preselected doffing position when said random ring rail position is therebelow.

3,861,131
APPARATUS FOR SPINNING LOOSE FIBRES

Jacques Le Chatelier, Riedisheim, France, assignor to Societe Alsacienne De Constructions Mecaniques De Mulhouse, Mulhouse, Cedex, France

Filed Nov. 28, 1973, Ser. No. 419,546
Claims priority, application France, Nov. 30, 1972, 72.42546
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 4 Claims

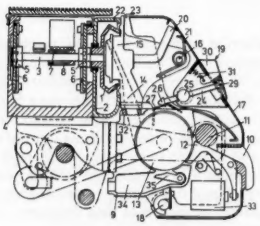


1. An open-end spinning device for spinning a thread, comprising a hollow rotating body having an axis, a fibre inlet duct opening into said hollow rotating body, a thread-guiding duct coaxial with said hollow rotating body, said thread-guiding duct having an inlet end located in said hollow rotating body and an outlet end, a chamber sealed about said outlet end of said thread-guiding duct, said chamber having a thread exit opening offset with respect to said axis of said hollow rotating body, said thread exit opening and said outlet end of said thread-guiding duct defining therebetween a portion of the path of travel of the thread, and an angular projection arranged slanting cross-wise in said portion of the path of travel of the thread.

3,861,132
FEED AND OPENING APPARATUS, ARRANGED IN A STATIONARY MANNER IN A SUPPORTING MEMBER, OF AN OPEN-END SPINNING UNIT

Fritz Stahlecker, Josef-Neidhart-Str. 18, D 7341 Bad Uberkingen, and Hans Stahlecker, Haldenstrasse 20, D 7334 Suessen, both of Germany

Filed Dec. 10, 1973, Ser. No. 423,108
Claims priority, application Germany, Dec. 14, 1972, 2261041
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 13 Claims

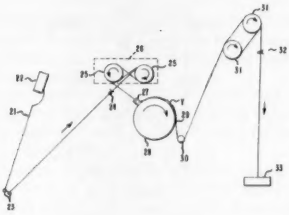


1. A spinning unit with means for feeding and opening fibers, mounted in a supporting member and each associated to one spinning point of an open-end spinning unit and being covered with movably arranged covering means extending to the area of a spinning rotor of the associated spinning unit and also covering said rotor and mounting an insert containing a portion of a fiber supply channel leading to said spinning rotor and at least one portion of the fiber removal channel leading away from said spinning rotor, whereby said covering means are retained in the closed position with locking means which are adjustable from the outside in the closed position.

3,861,133
PRODUCTION OF HIGHLY CRIMPED POLYESTER YARN

Hans R. E. Frankfort, Kinston, N.C., and Peter F. Lyons, Wilmington, Del., assignors to E. I. du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 210,884, Dec. 22, 1971, abandoned. This application Aug. 18, 1972, Ser. No. 281,972
Int. Cl. D02g *1/16, 3/24*
U.S. Cl. 57—140 R 14 Claims



1. In the process of preparing multifilament yarn of filaments which crimp due to asymmetric shrinkage properties when heat-relaxed, wherein said asymmetric shrinkage properties are imparted by passing the filaments under tension in contact with a hard surface to modify the filaments along their lengths; the improvements for providing better crimping properties in polyester yarn and higher processing speeds, wherein the improvements comprise passing drawn filaments of a single polyester composition at high speed in frictional contact with an unheated nonmetallic pin for a distance of 0.5 to 15 millimeters at a tension change over the pin of 0.2 to 1.5 grams per denier to modify the filaments substantially continuously on pin-contacting sides, the sum of the lengths of discontinuities in the modified portion which are more than 2 millimeters long being less than 5 percent of the filament length, and then imparting a random three-dimensional, curvilinear, configuration continuously along the modified filaments by (a) feeding the filaments at high speed into a jetted stream of compressible fluid heated to a temperature which will plasticize the filaments without causing fusion between filaments, and (b) impinging the filaments in a plasticized condition on a moving surface to separate the filaments from the heated fluid and convey the filaments on the moving surface for cooling in a substantially tensionless state.

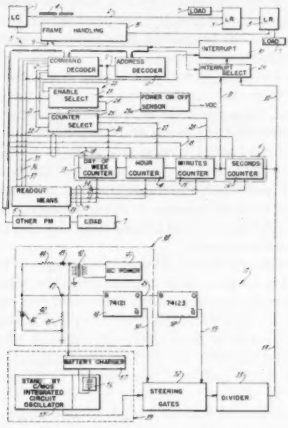
3,861,134
REMOTE TIME CLOCK SYSTEM WITH STANDBY POWER MEANS

Manuel Frank Chacon, Mequon, and Frederick J. Wolters, Whitefish Bay, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Dec. 15, 1972, Ser. No. 315,568
Int. Cl. G04c *13/02, 13/00*
U.S. Cl. 58—24 19 Claims

1. A data communication apparatus having a data communication loop cable means connecting a loop controller means to a plurality of remote stations, at least one of said remote stations including a real time clock controlled load means, said controller means establishing message frames for communicating with the remote stations, the improvement comprising a real time clock control apparatus at said remote stations comprising an address decoding means having an input means for connection to said loop controller and operable to establish an enable signal, a command decoding means having an input means for connection to said address decoding means

for establishing a plurality of outputs including a write command output and a read output, a real time clock means having a time set input means and a time readout means, said write command output being connected to actuate the set input means, said read output being connected to activate the

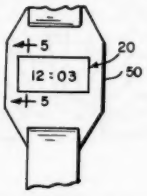


readout means, and said enable signal being coupled to the clock means and said set input means and said readout means being adapted for connection to said communication loop cable means in response to said enable signal for selectively receiving time information and for transmitting time information via said message frames.

3,861,135
ELECTRICAL INTERCONNECTOR AND METHOD OF MAKING

Richard E. Seeger, Jr., Topsfield; William J. Lynn, Groveland, and Frank Joseph Glaister, Salisbury, all of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Filed Feb. 8, 1973, Ser. No. 330,684
Int. Cl. G04b *19/30*; **G04c** *3/00*; **H01r** *5/00*
U.S. Cl. 58—50 R **25 Claims**

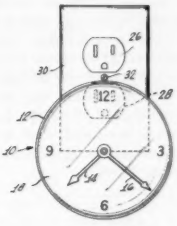


1. In a watch casing, a liquid crystal package for displaying information, said package having a plurality of electrical contacts for coupling signals to character electrodes thereof, means having a plurality of contacts for providing signals to the electrical contacts of said liquid crystal package, and an interconnector positioned between said package and said means having a plurality of contacts positioned between said package and said, said interconnector comprising an insulator material base having a plurality of teeth along at least one sidewall thereof and an elastomeric electrically conductive cured plastic contact positioned in the interdentil space between said teeth, said contacts protruding above and below the top and bottom surfaces of the teeth and adhering to the sidewall portion defining the interdentil space, said interconnector contacts connecting said contacts of said means having a plurality of contacts to said contacts of said liquid crystal package.

3,861,136
RECEPTACLE MOUNTED ELECTRIC CLOCK

Charles W. Blenkhorn, 3199 Via Buena, Laguna Hills, Calif. 95653

Filed May 10, 1974, Ser. No. 469,027
Int. Cl. G04b *37/14*; **H01r** *3/00*
U.S. Cl. 58—56 **5 Claims**

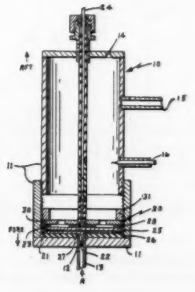


1. In combination:
a housing for a clock mechanism,
said housing having a front wall over which the clock hands are movable,
said housing having a back wall through which to apply power to the terminals of the clock motor within the housing;
and conductive prongs secured at one end in said housing and connected to the motor terminals,
said prongs extending out of said back wall and adapted to be inserted in receptacle holes of conventional wall receptacles,
said prongs when inserted in receptacle holes being in frictional engagement with conductive elements in the receptacle holes so as to maintain the clock in position against the receptacle.

3,861,137
MONOPROPELLANT ELECTROLYTIC IGNITER

Sid Russell, Suffield, and Terry L. Fondrk, Manchester, both of Conn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 19, 1973, Ser. No. 371,443
Int. Cl. F02k *9/02*
U.S. Cl. 60—39.82 P **10 Claims**



1. An electrolytic igniter for a rocket engine in which an electrolytically dissociatable fluid monopropellant is useable, comprising:
a. A first porous electrode of electrically conductive material, with said first electrode having a first suitable attachment to provide for a first electrical lead;

b. a second porous electrode also of electrically conductive material, with said second electrode having a second suitable attachment to provide for a second electrical lead;

c. a thin porous electrical insulator disposed between, and separating, said first electrode and said second electrode; d. and, a suitable container to house said first electrode, said second electrode, and said thin porous electrical insulator;

whereby when a voltage is applied across said first and said second electrodes through said first and said second suitable lead attachments respectively, and whereby when thereafter an electrolytically dissociatable fluid monopropellant is introduced into, and through, said first electrode, said porous electrical insulator, and said second electrode, an initial surge of electrical current is produced, heat is generated, and said fluid monopropellant ignites, burns, and forms very hot propellant gases.

3,861,138

METHOD OF PROPULSION USING STABLE, HIGH ENERGY COMPOSITIONS WITH HYDRAZINE CONTAINING WORKING FLUID

Robert M. Bridgeforth, Jr., Mercer Island, and George S. Sutherland, Seattle, both of Wash., assignors to Explosives Corporation of America, Issaquah, Wash.

Filed Jan. 27, 1964, Ser. No. 340,127
Int. Cl. C06d *5/10*
U.S. Cl. 60—217 **34 Claims**

What is claimed is:

1. A stable, high energy composition for use as a propellant or as an explosive, said composition principally comprising:

(a) as a reducing reactant, finely divided metal selected from the group consisting of aluminum, beryllium, and mixtures thereof;

(b) as an oxidizing reactant, hydrazinium nitrate; and

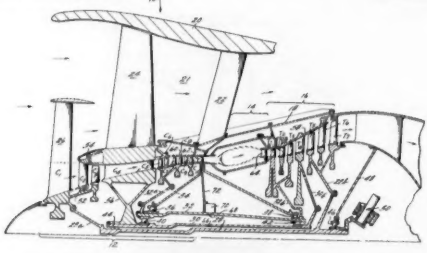
(c) a hydrazine containing working fluid.

3,861,139

TURBOFAN ENGINE HAVING COUNTERROTATING COMPRESSOR AND TURBINE ELEMENTS AND UNIQUE FAN DISPOSITION

Carmen B. Jones, Oxford, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 12, 1973, Ser. No. 331,806
Int. Cl. F02c *3/06, 7/06;* **F02k** *3/06*
U.S. Cl. 60—226 R **3 Claims**



1. A gas turbine engine comprising:

a compressor having first, second and third sets of bladed stages for pressurizing a flow of air, each of which sets is counterrotatable with respect to its adjacent set;

an inner annular duct substantially circumscribing said compressor;

an outer annular duct circumscribing said inner annular duct, and forming a fan air passage between said ducts;

a first bladed fan disposed within said outer duct for drawing a first fan stream of air through said outer duct and including blades the length of each of which extends substantially across the entire radial width of said outer duct;

a second bladed fan disposed within said outer duct for drawing a second fan stream of air through said outer duct;

a combustor for receiving said pressurized air from said compressor, for heating said air and for ejecting combustion products in a stream;

a turbine having a plurality of bladed stages for producing torque from said combustion stream, said turbine including first, second and third independently rotatable torque-transmitting shafts and first, second and third sets of axially adjacent bladed rotor stages carried respectively by said first, second and third shafts for driving each of said shafts in counterrotation with respect to its adjacent shaft in response to the engagement of said first, second and third sets of bladed stages by said combustion product stream; and

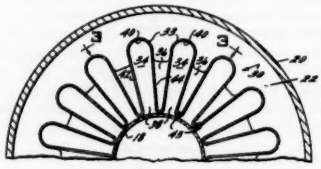
wherein substantially all of said bladed stages of said turbine are rotor stages, each counterrotatable relative to its immediately adjacent bladed stage; said first bladed fan is carried by said second set of compressor stages and is driven by said second shaft; said second bladed fan is carried by said first set of compressor stages and is driven by said third shaft; said third set of compressor stages is driven by said first shaft; and said second bladed fan is characterized in that the length of said blades is of such predetermined length that a substantial torque balance is maintained with the engine at a preselected rotary velocity of said third shaft.

3,861,140

TURBOFAN ENGINE MIXER

Roy A. Krabacher, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 269,017, July 5, 1972, Pat. No. 3,793,865.
This application July 27, 1973, Ser. No. 383,169
Int. Cl. F02k *1/26, 3/06;* **B21d** *47/00*
U.S. Cl. 60—262 **3 Claims**



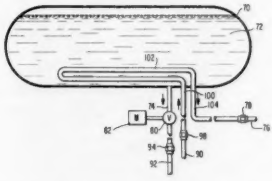
1. In a turbofan engine of the type including a core engine for emitting a hot gas stream through an exhaust thereof, an annular passage surrounding the core engine, and a bladed fan disposed within said annular passage upstream of said exhaust for drawing a fan stream of air through said annular passage, a mixer disposed downstream of said exhaust for mixing said hot gas stream with said fan stream, said mixer comprising:

a plurality of lobes extending outward from the hot gas stream and into said annular passage, each of said lobes formed solely of a structural panel of the type including first and second spaced substantially planar walls and a filler material sandwiched therebetween, each lobe including an acute angle formed by bending said panel about said first wall, and said panel proximate the apex of said acute angle including a substantially smooth continuous curved portion of said second wall and a portion of said first wall deformed into a plurality of waves.

3,861,141
FUEL PRESSURIZATION FOR MOMENTUM COMPRESSION RAMJET ENGINE

Bruce H. Neuffer, Huntsville, Ala., assignor to Brown Engineering Company, Inc., Huntsville, Ala.

Division of Ser. No. 172,417, Aug. 17, 1971, Pat. No. 3,768,257. This application Sept. 26, 1973, Ser. No. 400,749
Int. Cl. F02k *9/02*
U.S. Cl. 60—267 **10 Claims**



1. In a momentum compression ramjet engine having a combustion chamber including an outlet in the form of a jet nozzle and means supplying a combustible mixture of fuel and air under pressure to said combustion chamber including at least one injection nozzle positioned to direct a stream of high velocity gaseous fuel into the open inlet of an elongated mixing tube to mix with ambient air within the mixing tube and accelerate the air through the tube from the open inlet by momentum exchange, the improvement wherein said means supplying said combustible mixture of fuel and air comprises a first mixing tube of substantially uniform diameter and having a length within the range of six to eight times the effective diameter of the mixing tube wherein the effective diameter of said mixing tube is equal to the actual diameter thereof divided by the square root of the number of fuel injection nozzles positioned in the open inlet of the mixing tube, a conical diffuser section for converting velocity energy into pressure energy and having an inlet connected directly to the outlet of said mixing tube, a pressure vessel containing a volume of volatile liquid, a first heat exchanger mounted on said engine in position to absorb heat from said combustion chamber, a second heat exchanger in heat exchange relation with said volatile liquid, conduit means operatively connecting said first and second heat exchangers to one another, and means for circulating volatile liquid from said pressurized vessel through said conduit means to said first heat exchanger to absorb heat from said combustion chamber and to said second heat exchanger to surrender heat to said volume of volatile liquid within said pressure vessel to thereby maintain a predetermined minimum vapor pressure within said pressure vessel for maintaining pressure in said pressurized fuel system as fuel is used therefrom to operate the engine.

3,861,142
ANTI-POLLUTION SYSTEMS FOR AUTOMOBILES

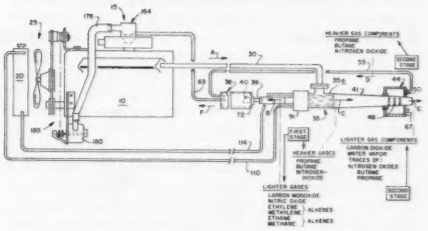
Ranendra K. Bose, 1554 N. Danville St., No. Arlington, Va. 22201

Continuation-in-part of Ser. No. 329,884, Feb. 5, 1973, , which is a continuation-in-part of Ser. No. 35,658, May 8, 1970, abandoned. This application Mar. 4, 1974, Ser. No. 447,893
Int. Cl. F01n *3/00*; **B01d** *45/14*
U.S. Cl. 60—274 **20 Claims**

1. A method of separating components of the exhaust gas mixture of an internal combustion engine for subsequent burning of pollutant components which comprises:

effecting a first separation of the exhaust gas mixture into heavier and lighter components wherein the lighter components are primarily combustible pollutants;

effecting a second separation in which said heavier components are separated into a first portion comprising substantially carbon dioxide and water vapor for egress to atmosphere and a second portion comprised substantially of combustible pollutants for subsequent combustion in said engine; and

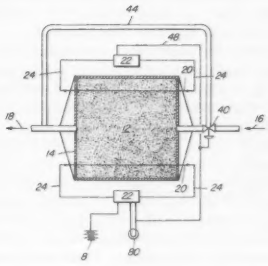


mixing said second portion with the lighter components effected in the first separation to effect a combustible mixture for re-entry to said engine.

3,861,143
HIGH TEMPERATURE PROTECTIONAL APPARATUS FOR ENGINE EMISSIONS CATALYTIC CONVERTER

Charles R. Morgan, Wenonah, and Richard C. Murphey, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 17, 1973, Ser. No. 351,925
Int. Cl. F01n *3/14*
U.S. Cl. 60—277 **3 Claims**



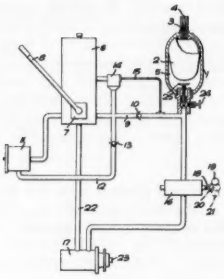
1. In an engine assembly comprising: an engine; means for producing a combustible mixture of hydrocarbon fuel and air; means for burning said fuel and air to produce exhaust gases containing a varying proportion of combustible components; and means for controlling the quality of said exhaust gases including catalytic emissions control converter means, the improvement which comprises:

means for detection of an abnormally high concentration of combustibles in said exhaust gases; and means operative in response to said detection indicating to the engine operator that a malfunction has occurred, said detection means comprising at least two electrical conductors in intimate association with said catalytic converter means, the first of said conductors having a melting point of about 1,800°F, melting indicating an operating malfunction, and the second of said conductors having a melting point of about 2,300°F, melting indicating catalyst damage.

3,861,144
HYDRAULIC ACTUATORS

Norman Harry Woods, Bournemouth, England, assignor to Normar Engineering Company Limited, Bournemouth, England

Filed Aug. 14, 1973, Ser. No. 388,123
Int. Cl. F15b *1/02*
U.S. Cl. 60—386 **12 Claims**



1. A hydraulic starter system having a hydraulic starter motor with a starter pinion and actuating means for the motor, the actuating means comprising:

a hydraulic accumulator having a first space capable of containing pressurized gas;

means defining a second space capable of containing hydraulic liquid, said second space being connected to the hydraulic motor;

wall means sealingly separating said first and second spaces, said wall means being constructed and arranged to permit changes in volume of said first space;

means for introducing pressurized hydraulic liquid into said second space so as to reduce the volume of said first space so as to compress the gas; and

valve means for controlling communication between said second space and the hydraulic motor, said valve means having an inlet connected to said second space and an outlet connected to the hydraulic motor and said valve means including two discrete passages through which hydraulic liquid can flow from said second space to the hydraulic motor, one of said passages being adapted to permit a restricted flow of hydraulic liquid to cause a slow rotation of the hydraulic motor for causing the starter pinion to engage with a ring gear of an engine flywheel and the other of said passages being adapted to permit an increased flow of hydraulic liquid to the hydraulic motor to cause rapid rotation of the motor, and means for bringing the passages sequentially into communication between said inlet and outlet of said valve means.

3,861,145
MULTIPLE HYDRAULIC CONTROL CIRCUITS WITH PRESSURE COMPENSATED FLOW CONTROL AND A SINGLE VARIABLE DELIVERY PUMP

Gerald D. Hall; Allyn J. Hein; Howard L. Johnson, and John A. Junck, all of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 1, 1973, Ser. No. 402,367
Int. Cl. F16h *39/46*
U.S. Cl. 60—427 **9 Claims**

1. A fluid delivery system including,

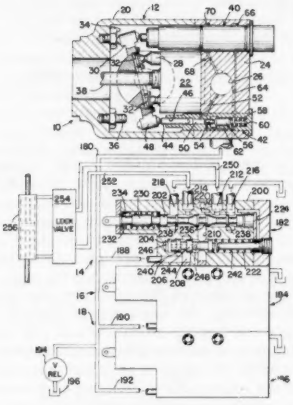
a variable displacement pump having an inlet and an outlet for delivering fluid under pressure,

a pair of load circuits connected to said outlet,

a servo control means connected to said pump which is responsive to load circuit pressure for regulating the displacement of said pump and thereby provide pump output commensurate with the demand of the load circuits, and wherein each load circuit comprises,

a load, and

control valve means comprising a body, flow control spool means in said body for modulating communication between said outlet and main control spool means including a main control spool slidably located within a second bore in said body and a second spring means biasing said main control spool to a neutral position closing off communication between said flow control spool means and said load, said main control spool having means thereon which are operable to provide a variable orifice intermediate said flow control spool means and said load, and wherein said control valve means is actuable from a neutral position to direct fluid under pressure from said outlet to said load, said control valve means providing pressure compensated flow control whereby immediate response is provided when said control valve means is moved from the neutral position.



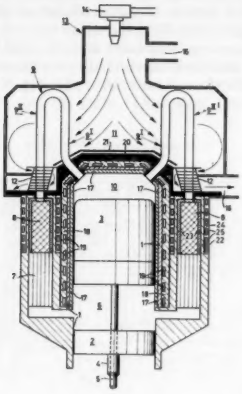
3,861,146
HOT-GAS RECIPROCATING ENGINE

Brian Lynch, and Roelf Jan Meijer, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 12, 1973, Ser. No. 424,114
Claims priority, application Netherlands, Jan. 2, 1973, 7300002
Int. Cl. F02g *1/04*
U.S. Cl. 60—524 **9 Claims**

1. A hot-gas reciprocating engine, comprising at least one cylinder with an expansion space of variable volume and higher mean temperature during operation, the said expansion space communicating, via a regenerator which is incorporated in a housing, with a compression space of variable volume and lower mean temperature during operation, characterized in that at least the part of the cylinder which bounds the expansion space and at least the part of the regenerator housing which envelops the regenerator part of higher temperature during operation facing the expansion space have inner walls which are each provided with at least one layer of a heat-insulating material which acts as a partition between the cylinder part and the expansion space and between the regenerator

housing part and the regenerator part, respectively, cooling members being provided for maintaining a lower mean temperature of the said parts of cylinder and regenerator housing during operation.



3,861,147

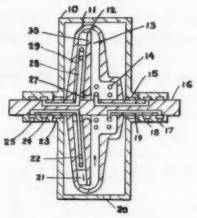
SEALED SINGLE ROTOR TURBINE

Michael Eskeli, 6220 Orchid Ln., Dallas, Tex. 75230

Continuation-in-part of Ser. No. 404,406, Oct. 9, 1973,. This application Oct. 30, 1973, Ser. No. 410,985

Int. Cl. F01k *27/00*

U.S. Cl. 60—643 **6 Claims**



1. A turbine for generating power and comprising:

a. a casing for enclosing rotor therewithin and for supporting shaft;

b. a shaft journalled in bearings in said casing for rotation;

c. a rotating rotor mounted on said shaft so as to rotate in unison therewith, said rotor being of circular configuration in cross section and adapted for high speed rotation, said rotor having first radially outwardly extending working fluid passageways with vanes therewithin for ensuring that said working fluid therewithin rotates at the same rotational speed as said rotor for effecting centrifugal compression and effecting an elevated pressure; said first radially extending passageways having at their outward ends means for discharging said working fluid in forward direction which is the direction of rotation; said first radially extending passageways being provided with heating heat exchanger near the outward end of said vanes to add heat to said working fluid prior of its said discharge forward; said working fluid being discharged from said forward discharge means to a first cavity, wherein said working fluid will have an absolute tangential velocity greater than the tangential velocity of said first cavity; said first cavity being situated outwardly from said first radially extending working fluid passageways; said working fluid being passed from said first cavity to radially inward extending working fluid passageways with the entry from said first cavity to said inward passageways being at the outward side of said first cavity; said radially inward extending passageways having vanes therewithin to ensure that said working fluid therewithin rotates at the same rotational speed as said rotor for receiving the work associated with deceleration of said working fluid; said working fluid then being passed to a cooling heat exchanger located near the rotor center for removal of heat from said working fluid; said working fluid then passing through an opening near the rotor center adapted for passing said working fluid and communicating with said first outward extending passageways; said heating heat exchanger being provided with a heating fluid via passageways through said rotor shaft and then distributed to said heat exchanger and then discharged via said rotor shaft said cooling heat exchanger being provided with cooling fluid via passages through said rotor shaft and then distributed to said cooling heat exchanger and then discharged via said rotor shaft;

d. a working fluid being circulated within said rotor, with a predetermined amount of said working fluid having been sealed within said rotor;

e. a heating fluid being circulated within said heating heat exchanger in heat exchanger relationship with said working fluid;

f. a cooling fluid being circulated within said cooling heat exchanger and being in heat exchange relationship with said working fluid.

3,861,148

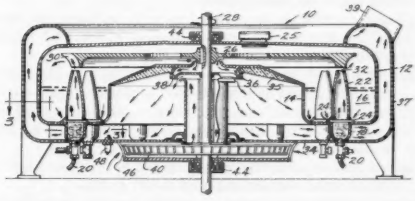
METHOD AND APPARATUS FOR CONVERTING HEAT ENERGY TO MECHANICAL ENERGY

Leo Bailey, Green Acres Mobile Est., Lot 58, and David R. Kimmel, 4441 10th Ave. N., both of Lake Worth, Fla. 33460

Filed Nov. 12, 1973, Ser. No. 415,175

Int. Cl. F04f *1/18;* **F15b** *21/06, 1/00*

U.S. Cl. 60—650 **11 Claims**



1. A method of converting heat energy to mechanical energy in a continuous cyclical manner, wherein each cycle comprises the steps of:

injecting a fuel into a confined expansion zone containing a hot liquid, said fuel having a boiling point lower than the boiling point of said liquid;

heating said fuel by contact with said hot liquid contained within said expansion zone, so as to cause expansion of said fuel but without igniting said fuel;

imparting motion to said liquid out of said expansion zone as a result of said expansion of said fuel;

imparting motion to a power transmitting means by action of said liquid against said power transmitting means;

collecting said liquid in a collection zone in communication with said expansion zone;

allowing said expanded fuel to leave said expansion zone and enter said collecting zone;

removing said expanded fuel from said collecting zone into a combustion zone disposed in heat exchange relation to said liquid;

igniting said fuel in said combustion zone so as to heat said liquid adequately to develop and maintain said liquid at conditions appropriate to cause said fuel to be expanded in accordance with said heating step;

exhausting said ignited fuel from said combustion zone; and replacing said liquid in said expansion zone with at least a portion of said liquid collected in said collecting zone.

3,861,149

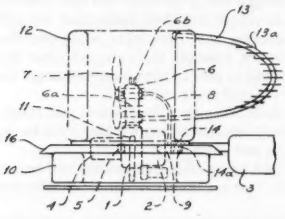
MODULAR CLOSED CYCLE TURBINE SYSTEM

Donald A. Kelly, 5806 69th Pl., Maspeth, N.Y. 11378

Filed Feb. 8, 1972, Ser. No. 224,416

Int. Cl. F01k *11/00*

U.S. Cl. 60—669 **6 Claims**



1. A modular closed cycle turbine system comprising a vapor turbine expander driven by expanding vapor force, a circular ring-like vapor generator centrally disposed around said vapor turbine expander, a helical expansion condenser centrally disposed around a portion of said vapor turbine expander above said circular ring-like vapor generator, a short time running electric motor intermittently coupled to said vapor turbine expander,

an auxiliary expansion turbine mounted to the top portion of said vapor turbine expander, duct connection means disposed between said auxiliary expansion turbine and said vapor turbine expander,

a large air moving fan secured to said auxiliary expansion turbine which is centrally disposed within said helical expansion condenser,

a rotary pump mounted to said circular ring-like vapor generator driven by flexible drive means from said auxiliary expansion turbine, regeneration means disposed between said circular ring-like vapor generator and said rotary pump,

sealed duct connection means disposed between said helical expansion condenser and said rotary pump,

vapor transfer duct means rearwardly disposed between the exit port of said auxiliary expansion turbine and the entrance of said helical expansion condenser, multiple horizontal fins uniformly disposed on said vapor transfer duct, duct connection means disposed between said rotary pump and said circular ring-like vapor generator,

an alternator coupled to said modular closed cycle turbine system,

thermal isolation means disposed between said helical expansion condenser and said circular ring-like vapor generator.

3,861,150

LOW POLLUTION VAPOR ENGINE SYSTEMS

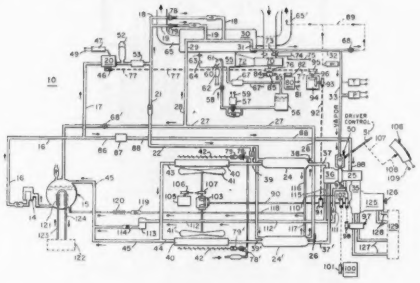
William P. Lear, Verdi, Nev., assignor to Lear Motors Corporation, Reno, Nev.

Filed June 9, 1972, Ser. No. 261,158

Int. Cl. F01k *11/00*

U.S. Cl. 60—670 **3 Claims**

1. A vapor powered engine system with a closed Rankine cycle configuration comprising vapor generating means, a vapor turbine, throttle means arranged for receiving vapor output from said generating means, the output of said throttle being coupled to the input section of said turbine to thereby control the power output of the turbine, control means responsive to the power output condition of the system for correspondingly controlling the mass flow of vapor output from said generating means and directly meet output power demand, said throttle means including a variable vapor outlet area displacement assembly with a plurality of output valves



each having an associated port, a control member connected to said assembly for successively operating said valves and control exposed areas at said ports and thereby the mass of vapor to said turbine, and a plurality of nozzles arrayed about the rotor of said turbine, said nozzles being in operative communication with associated throttle output ports through respective passages in the turbine, whereby smooth variable control of turbine power output is effected.

3,861,151

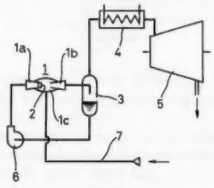
ENGINE OPERATING SYSTEM

Toshio Hosokawa, Midorigaoka 2-6-5-503, Meguro-ku, Tokyo, Japan

Filed Apr. 12, 1974, Ser. No. 460,455

Int. Cl. F01k *7/38*

U.S. Cl. 60—689 **2 Claims**



1. An engine operating system comprising: a venturi tube consisting of two closely opposite nozzles, an inlet nozzle and an exit nozzle, the neighbouring part of such opposing ends of the nozzles being tightly closed so as to form a suction port, while the convergent end of the inlet nozzle being covered with a perforated plate provided with a number of small bell-mouthed holes; a air-liquid separator connected with the exit of the venturi tube, the upper end of which separator is connected to an engine member through a heater, the air exit of said engine member being opened to the atmosphere, while the bottom end of said separator being connected to the inlet nozzle of the venturi tube by way of a driving pump; and a pipe through which the suction port of the venturi tube is connected to the open air.

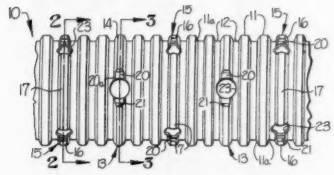
3,861,152
CORRUGATED DRAINAGE PIPE WITH STAGGERED ARRANGEMENT OF PLATEAU RECESSES

Ernest J. Maroschak, Box 878, Roseboro, N.C. 28382

Continuation-in-part of Ser. No. 262,103, June 12, 1972, Pat. No. 3,747,352, which is a continuation-in-part of Ser. No. 228,508, Feb. 23, 1972, Pat. No. 3,802,202. This application July 19, 1973, Ser. No. 380,904

Int. Cl. E02b *11/00*; F16l *11/12*

U.S. Cl. 61—11 11 Claims



1. A resilient plastic pipe having spaced apart successive annular ribs with annular valley portions therebetween defining corrugations along the periphery of the pipe, said ribs being arranged in successive groups with each of the successive groups of ribs having at least several ribs in the group interrupted by elongate recessed wall portions positioned at a level intermediate that of the peripheries of said ribs and said valley portions, and wherein the respective elongate recessed wall portions in each group of ribs are arcuately spaced from one another with at least one of the elongate recessed wall portions being offset longitudinally of the pipe from an elongate recessed wall portion in another rib of the group.

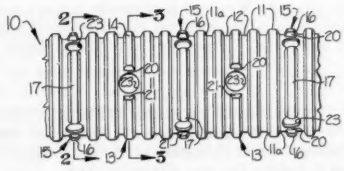
3,861,153
CORRUGATED DRAINAGE PIPE WITH STAGGERED ARRANGEMENT OF RIB INTERRUPTIONS

Ernest J. Maroschak, Box 878, Roseboro, N.C. 28382

Continuation-in-part of Ser. No. 228,508, Feb. 23, 1972, Pat. No. 3,802,202. This application July 19, 1973, Ser. No. 380,905

Int. Cl. E02b *11/00*; F16l *11/12*

U.S. Cl. 61—11 15 Claims



10. A resilient plastic pipe having spaced apart successive annular ribs with annular valley portions therebetween defining corrugations along the periphery of the pipe, said ribs being arranged in successive groups with each of the successive groups of ribs having at least several ribs in the group interrupted by recessed wall portions, and wherein the respective recessed wall portions in each group of ribs are arcuately spaced from one another with at least one of the recessed wall portions being offset longitudinally of the pipe from a recessed wall portion in another rib of the group.

3,861,154
TUNNELLING

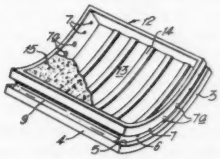
Edwin Frank Cooper, Petts Wood, England, assignor to Celmac A.G.

Filed Jan. 11, 1972, Ser. No. 216,957

Claims priority, application Great Britain, Jan. 11, 1971, 1229/71

Int. Cl. E21d *11/08*

U.S. Cl. 61—45 R 8 Claims



1. A lining for a tunnel, shaft or the like comprising a series of rings joined in end-to-end relation, each of said rings including a portion comprising at least two segmental blocks having sidewalls which are securely connected together during the assembly of said portion in a side-by-side relation by at least one unitary, preformed and resiliently deformable fishplate, each of said blocks having two arcuate end walls, said one unitary fishplate bridging said blocks by lying along and being connected to one of said end walls of one block and lying along and being connected to the corresponding arcuate end wall of the immediately adjacent block and compression means being provided to connect each ring to an adjacent ring, each of said compression means passing through at least a portion of an end wall of one block and a portion of an end wall of the corresponding block of the adjacent ring and serving to compress the fishplate located between said portions, whereby said fishplate seals the space between adjacent portions to prevent the ingress of water into said tunnel.

3,861,155
PUMPABLE ROCKBOLT METHOD

Meyer Steinberg, Huntington Station; Bernard Manowitz, Brightwaters, and Charles H. Waide, Center Moriches, all of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

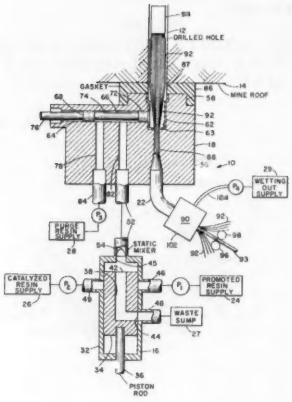
Filed Dec. 5, 1972, Ser. No. 312,393

Int. Cl. E21d *21/00*

U.S. Cl. 61—45 B 3 Claims

1. A method of reinforcing the roof of a stuberranean cavity comprising the steps of drilling a series of spaced holes upwardly into said roof, injecting into and filling one of said holes with a polymerizable mixture containing continuous filaments, some of said mixture extending out of the hole being filled, after a period of time sufficient to permit said

mixture to harden in situ, removing the hardened portion of said mixture extending out of said hole, and subsequently



inserting said hardened portion into the next hole to be filled as a precursor for mixture inserted into said next hole.

3,861,156

METHOD AND APPARATUS FOR PRESS-INSERTION

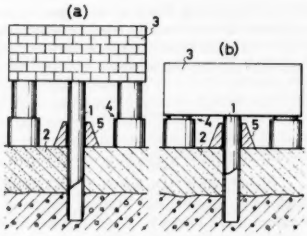
Masaaki Uchida, No. 13-12, 4-chome, Morishita, Koto-ku, Tokyo, Japan

Filed Mar. 7, 1973, Ser. No. 338,843

Claims priority, application Japan, Mar. 15, 1972, 47-26338; Japan, Mar. 15, 1972, 47-26339; Japan, Mar. 21, 1972, 47-28365

Int. Cl. E02d *7/20*

U.S. Cl. 61—53.5 **7 Claims**



1. A method for press-insertion having the steps of holding a press-insertion member vertically on a place where the press-insertion be effected, positioning a weight above said press-insertion member, lowering said weight to press and insert said press-insertion member, lifting said weight upward, arranging and holding another press-insertion member between said weight and said press-insertion member, lowering again said weight to push both of said press-insertion members.

3,861,157

APPARATUS FOR DEPOSITING UNDER WATER A FLOWABLE HARDENABLE OR NOT HARDENABLE MASS

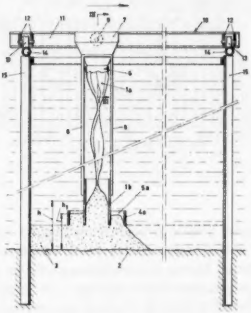
Henri Fredericus Josephus Marie Hillen, The Hague, Netherlands, assignor to Foundation Patent & Investment Company, N.V., Gonda, Netherlands

Filed Mar. 1, 1973, Ser. No. 336,994

Claims priority, application Netherlands, Mar. 1, 1972, 7202734

Int. Cl. E02b *1/00, 3/12*

U.S. Cl. 61—63 **4 Claims**



1. Apparatus for depositing a layer of a flowable mass of hardenable or not hardenable material, such as a concrete mixture, asphaltic bitumen and the like, onto a surface submerged beneath water, said apparatus comprising, in combination, a carrier structure which is movable substantially horizontally; a relatively elongated pouring tube suspended from said carrier structure for horizontal movement therewith with its lower end spaced a relatively short distance above said submerged surface; a filling device on said carrier structure for supplying the flowable mass into the upper end of said flowing tube for flow downwardly through said pouring tube and laterally beneath the lower end thereof onto said submerged surface; and at least one relatively short sleeve arranged centrically on the lower end of said pouring tube with its lower end substantially coplanar with the lower end of said pouring tube; means mounting said sleeve on said pouring tube for horizontal movement therewith; said sleeve being spaced laterally from said pouring tube to define an annular space receiving the flowable mass flowing laterally outwardly beneath the lower end of said pouring tube to limit the height to which said flowable mass rises under the pressure head of the flowable mass still in said pouring tube; whereby, as said carrier structure is moved horizontally, a level layer of the flowable mass is deposited on said submerged surface to a height determined by the lower edge of said sleeve.

3,861,158

SUBMERGED PIPELINE STABILIZATION

Jack W. Swain, Bedford; Clarence T. Thomerson, and Tom C. Waldrop, both of Arlington, all of Tex., assignors to Regal Tool & Rubber Co. Inc., Grapevine, Tex.

Filed Feb. 7, 1973, Ser. No. 330,396

Int. Cl. E02d *27/46, 27/52;* **F16l** *1/00*

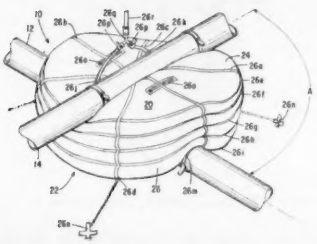
U.S. Cl. 61—72.1 **11 Claims**

1. In combination with a pair of pipelines submerged beneath the surface of a body of water and crossing one another at a substantial angle, an improved system for maintaining vertical separation between the pipelines, which comprises:

a. a submergible structure adapted for positioning between the pipelines while the upper pipeline is supported in a raised condition relative to the lower pipeline and comprising a lower member having a saddle for receiving and

enveloping a top portion of the lower pipeline and an upper member having a saddle for receiving and enveloping a bottom portion of the upper pipeline, and

b. load bearing means positioned between and coupled to said upper and lower members for maintaining a predetermined vertical separation between said members and thereby maintaining vertical separation between the pipelines following release of the upper pipeline into load bearing engagement with the saddle of the upper member, said load bearing means comprising a flexible casing adapted to be submerged evacuated and positioned between the pipelines and means for filling said casing with cement to assure maintenance of the predetermined separation between the pipelines.



3,861,159

SEALED PACKAGE CONTAINING FROZEN LIQUID

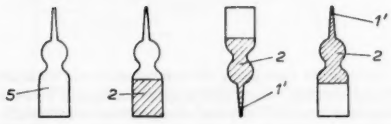
Patrice Barbey, 2, rue de la Cite Radieuse, Dingsheim (Bas-Rhin), France

Filed Dec. 20, 1972, Ser. No. 316,971

Claims priority, application France, Dec. 20, 1971, 71.46674

Int. Cl. F25c *1/00*

U.S. Cl. 62—1 **1 Claim**



1. A sealed package containing gas and a completely frozen aqueous liquid, the package having a closure, the frozen liquid occupying all of the package adjacent the closure, the gas in the package being spaced from the closure by the frozen liquid, the proportion between the quantity of frozen liquid and the quantity of gas being such that the volume by which the aqueous liquid expands during freezing is at least 30 percent of the volume of the gas prior to the freezing of the aqueous liquid.

3,861,160

PROCESS FOR SAFE STORAGE, HANDLING, AND USE OF ACETYLENE

David G. Walker, Baytown, Tex., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Aug. 9, 1973, Ser. No. 387,173

Int. Cl. F17d *11/00*

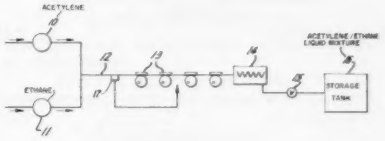
U.S. Cl. 62—48 **3 Claims**

1. The process of storing and handling acetylene at high pressures without danger of deflagration that comprises the steps of

a. mixing acetylene with ethane at a temperature in the range of 20° to 50°C. and a pressure in the range of 1 atmosphere to 3 atmospheres, thereby forming a gaseous mixture that contains up to 40 mole percent of acetylene,

b. subjecting said gaseous mixture to a pressure in the range of about 5 to 200 atmospheres, and

c. cooling the compressed gaseous mixture to liquefy it.



3,861,161

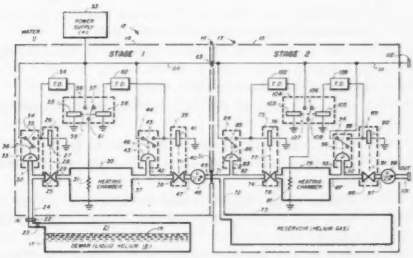
VAPOR PRESSURE REGULATOR

Michael T. Cooper, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 2, 1973, Ser. No. 412,067

Int. Cl. F17c *7/02*

U.S. Cl. 62—50 **10 Claims**



1. A vapor pressure regulator, comprising in combination: means adapted for being connected to a container for receiving the vapor of a predetermined substance contained therein; means connected to said receiving means for timely confining the vapor received thereby within a predetermined fixed volume, said vapor confining means including a first normally closed solenoid valve connected to the output of said receiving means and adapted for being opened in response to a first predetermined signal; a heating chamber effectively connected to the output of said normally closed solenoid valve; and a second normally closed solenoid valve effectively connected to the output of said heating chamber and adapted for being opened in response to a second predetermined signal;

means disposed in proximity with the heating chamber of said vapor confining means for the heating of the vapor confined therein in response to the energization thereof; means connected to said vapor heating means for effecting the energization thereof while said vapor is confined as a predetermined fixed volume within said confining means; and

means connected to the output of said vapor confining means for timely exhausting the heated vapor therefrom.

3,861,162

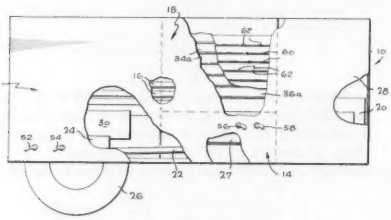
COOLING SYSTEM AND HEAT TRANSFER ASSEMBLY

Lawrence R. Horton, Tarzana; G. Val Mumford, Los Angeles; Charles A. Jackson, Thousand Oaks; William P. Holcomb, Westlake Village; Catherine Horton, Tarzana, and Charles Willison, Diamond Bar, all of Calif., assignors to Refrigerated Sea Water. Inc., Sherman Oaks, Calif.

Filed Mar. 16, 1973, Ser. No. 342,143

Int. Cl. B60h *3/04*

U.S. Cl. 62—243 **8 Claims**



1. An improved engine powered portable product cooling system, comprising, in combination:

A. A compressor assembly, including:

1. a compressor coil sub-assembly comprising:
   a. a first hollow core containing refrigerant to be condensed,
   b. a first outer hollow tube spaced from and surrounding said first core and containing water,
   c. spacer means between said first core and first tube for creating turbulence in said first tube water;
2. pump means for compressing said refrigerant and circulating said refrigerant through said first core and said water through said first tube; and
3. first inlet and outlet means connected to said first tube;

B. An evaporator assembly, including:

1. an evaporator coil sub-assembly comprising:
   a. a second hollow core containing cooled condensed refrigerant,
   b. a second outer hollow tube spaced from and surrounding said second core and containing water to be cooled,
   c. spacer means between said second core and second tube for creating turbulence in said second tube water;
2. pump means for circulating said refrigerant through said second core and water through said second tube; and
3. second inlet and outlet means connected to said second tube;

C. Transfer means interconnecting said first and second cores for circulation of said refrigerant between said compressor and said evaporator;

D. Product holding means connected with said second outlet means for contacting product with cooled tube water;

E. Engine motive means for powering said pump means;

F. Container means enclosing said system; and

G. Means for moving said system.

3,861,163

METHOD AND APPARATUS FOR MAKING BLOCK ICE

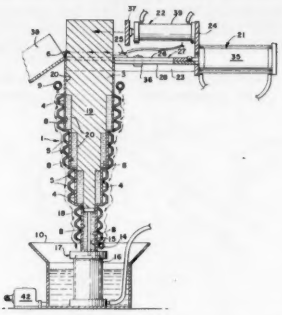
Walter H. Carpenter, Rt. 3, Box 65, Riverview, Fla. 33569

Filed Dec. 10, 1973, Ser. No. 423,008

Int. Cl. F25c *1/08, 1/24*

U.S. Cl. 62—73 **11 Claims**

1. A method of making frozen liquid blocks, comprising forming a frozen liquid vertical solid column substantially rectangular in horizontal cross-section and divided vertically into a plurality of sections relatively outwardly stepped toward the top only between one pair of opposite sides of said column, and cutting of and removing a frozen block from a top



portion of said column while replacing the volume of said block by freezing thin slabs of said liquid to said sides and a bottom of said column below said top portion.

3,861,164

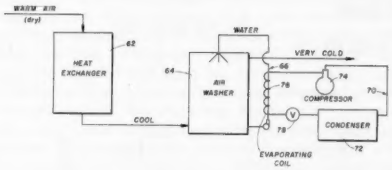
AIR CONDITIONING PROCESS

Ted R. Brown, 1212 Princeton Ave., Salt Lake City, Utah 84105

Division of Ser. No. 359,368, May 11, 1973, Pat. No. 3,812,685, which is a continuation-in-part of Ser. No. 172,968, Aug. 19, 1971, abandoned. This application Nov. 23, 1973, Ser. No. 418,528

Int. Cl. F25d *17/06*

U.S. Cl. 62—91 **2 Claims**



1. A process for controlling the temperature and moisture content of air having a dew point of not more than 57°F corresponding to at least 90°F dry bulb temperature, sequentially

preparing an air flow path accommodating 400–600 CFM/ton net sensible cooling;

drawing fresh dry air exclusively from a fresh air source and through the flow path in the amounts of 400 to 600 CFM/ton net sensible cooling;

pre-cooling the fresh air with a heat exchanger without altering its moisture content;

scrubbing the air with recirculating water to adiabatically cool the air; and

refrigerating the recirculated water to further cool the air to within a range of 53°F to 60°F.

3,861,165

DEHUMIDIFICATION OF AIR

Itsuro Hirano, 2-3-34-1905, Mita, Minato-ku, Tokyo, Japan

Filed Oct. 2, 1973, Ser. No. 402,670

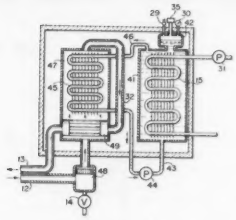
Claims priority, application Japan, Oct. 2, 1972, 47-97985

Int. Cl. F25d *17/06*

U.S. Cl. 62—93 **12 Claims**

12. A method for dehumidfying air comprising cooling said air with a primary coolant, confining said primary coolant within a sealed pressure vessel, circulating said primary coolant through a primary heat exchanger, cooling said primary

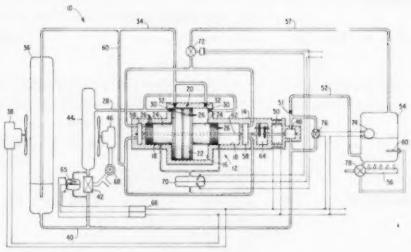
coolant with a secondary coolant, selectively recirculating said secondary coolant through a secondary heat exchanger and a refrigerant source, and controlling said recirculation of said secondary coolant according to control responses transmitted at predetermined primary coolant volume variation levels for maintaining an ice volume in said primary coolant of between 20 and 50 percent; said primary coolant being an admixture of water or an aqueous solution of a freezing point depressant, and ice.



3,861,166
HEAT PUMP SYSTEM

Fred L. Goldsberry, Dallas, Tex., assignor to Lone Star Gas Company, Dallas, Tex.

Filed Mar. 1, 1973, Ser. No. 337,131
Int. Cl. F25b *1/00*
U.S. Cl. 62—115 **19 Claims**



1. In combination with a heat pump system wherein a secondary fluid is cooled by contact with an evaporator supplied with working fluid from a condenser, the improvement which comprises:

a boiler adapted to provide the working fluid at a high pressure and temperature:

a housing having first and second pairs of opposed chambers with a dual radius piston therein having oppositely directed faces;

structure forming a first fluid path connected from said boiler alternately to apply high pressure gas from said boiler to the oppositely directed faces of said piston in said first opposed chambers in said housing to reciprocate said piston;

structure forming a second path connected from the evaporator alternately to apply low pressure gas to said second pair of opposed chambers to deliver compressed fluid from the evaporator to the condenser;

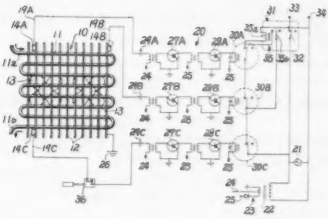
valve means within said housing for controlling alternate admission of fluid from said first fluid path to the oppositely directed faces of said piston in said first opposed chambers and directing spent fluid from said chambers of said pistons to the condenser, said valve means comprising rotating disk valves driven by motor means and disposed adjacent the first opposed chambers in said housing with a shaft extending through said piston for maintaining a predetermined angular phase relationship between the valves; and

structure forming a third path connected from the condenser to said boiler for supplying working fluid to said boiler.

3,861,167
DEFROSTING APPARATUS

Kiyoichi Nijo, Osaka, Japan, assignor to Naniwa Sangyo Co., Ltd., Osaka, Japan

Filed Nov. 19, 1973, Ser. No. 416,750
Claims priority, application Japan, Dec. 15, 1972, 47-125146
Int. Cl. F25b *41/00*
U.S. Cl. 62—209 **5 Claims**



1. In a domestic refrigerator having an evaporator comprising a cooling coil and cooling fins attached to the cooling coil, a defrosting apparatus comprising a first temperature sensing device mounted in heat transfer relation with a cooling medium inlet of the cooling coil for sensing the temperature of the evaporator near said inlet, a second temperature sensing device mounted in heat transfer relation with the evaporator where said evaporator has its lowest temperature in case the condensation temperature of the cooling medium becomes high due to a rise of atmospheric temperature for sensing the temperature of the evaporator near said location, a third temperature sensing device mounted in heat transfer relation with a cooling medium outlet of the cooling coil for sensing the temperature of the evaporator near said outlet, each of the temperature sensing devices comprising a pair of electrodes and water between the electrodes for switching at 0° C due to the difference in resistivity between liquid water and ice, and an electric control circuit for stopping the supply of cooling medium to the evaporator when water in all of the first, second and third sensing devices has frozen and continues stopping of the supply of cooling medium until ice on all of the first, second and third sensing devices has melted.

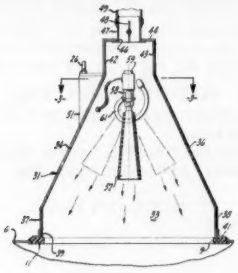
3,861,168
CARBON DIOXIDE COOLING MACHINE

William John Sayers, Hacienda Heights, Calif., assignor to The Union Ice Company, San Francisco, Calif.

Filed Sept. 17, 1973, Ser. No. 397,999
Int. Cl. F25d *3/12*
U.S. Cl. 62—388 **7 Claims**

1. A carbon dioxide cooling machine for use with a container having an opening comprising a frame including a substantially enclosed shroud having a margin defining an outlet, means for moving said shroud away from and into abutment with said container with the interior of said shroud in communication through said outlet and said opening with the interior of said container, a shaft extending into said shroud, means on said frame for supporting said shaft for oscillation, a gas horn fixed on said shaft inside said shroud and directed toward said

outlet, means on said frame for oscillating said shaft and said horn from side to side of said outlet, and means extending into



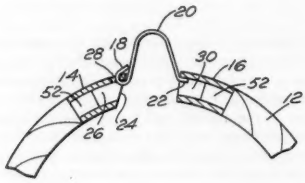
said shroud and connected to said gas horn for supplying said gas horn with carbon dioxide.

3,861,169

EARRING HAVING TUBULAR END PORTIONS SECURED BY CAST MATERIAL

Raymond R. Dansereau, Warwick, R.I., assignor to Beatrix Jewelry Company, Pawtucket, R.I.

Filed June 11, 1973, Ser. No. 368,658
Int. Cl. A44c 7/00
U.S. Cl. 63—12 **1 Claim**



1. A pierced earring comprising an ornamental body having inwardly extending end portions mounted thereon in spaced apart relation, the body being formed in a substantially solid construction and each of the end portions being tubular in construction, an ear wire having an end pivotally joined to one of said tubular end portions, the other end of said ear wire being insertable into the other tubular end portion when the earring is mounted on the ear lobe of a wearer, said body having a hoop configuration, said inwardly directed tubular end portions being located in spaced relation at the top of the hoop when the earring is mounted on the ear lobe of the wearer and being separately preformed, said body including means integrally cast therewith at said ends for firmly joining said tubular end portions to said body, said means comprising cast material received in an end of each tubular end portion to secure it to said body, the remaining interior portion of each tubular end portion defining a cavity.

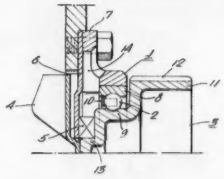
3,861,170

COOLING WATER PUMP, PREFERABLY OF MOTOR CAR ENGINES

Sture Lennart Asberg, Savedalen, Sweden, assignor to SKF Industrial Trading and Development Company B.V., Jutphaas, Netherlands

Filed Nov. 9, 1972, Ser. No. 304,905
Int. Cl. F16c 1/06; F04d 29/22
U.S. Cl. 64—3 **9 Claims**

1. A replaceable and/or disposable pump unit for liquid-cooled internal combustion engines preferably for vehicle engines and adapted to be mounted in an opening of the pump housing, said pump unit including a pump unit housing, an impeller, a drive member operatively connected to the impeller as an integral structure to rotate the same and forming therewith a rotatable assembly, bearing means supporting the



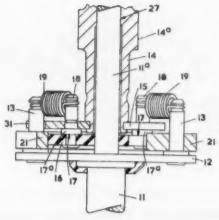
drive member for rotation relative to the unit housing and a seal adapted to seal an annular space between the rotatable assembly and unit housing, said pump unit housing, impeller, drive member, bearing means and seal forming an integral undetachable shaftless unit and said bearing means having a comparatively large pitch diameter.

3,861,171

CAM ASSEMBLY

William Harold Cooksey; Brian William Cleaver, both of Walsall, and Walter Joseph Groom, Sutton Coldfield, all of England, assignors to Joseph Lucas (Electrical) Limited, Birmingham, England

Filed Jan. 15, 1973, Ser. No. 323,385
Claims priority, application Great Britain, Jan. 15, 1972, 2022/72
Int. Cl. F16d 5/00
U.S. Cl. 64—25 **5 Claims**



1. A cam assembly, for an ignition distributor, including a driven shaft, a hollow cam shaft rotatably mounted on said driven shaft, a first plate secured to the cam shaft, a second plate generally parallel with the first plate and secured to the driven shaft, and a centrifugal mechanism coupling the driven shaft and the cam shaft so that the cam shafts rotates with the driven shaft, the centrifugal mechanism altering the angular position of the cam shaft relative to the driven shaft in accordance with the speed of rotation of rotation of the assembly, the centrifugal mechanism including a control weight pivotally mounted on the second plate for movement about an axis parallel to the axis of the driven shaft, and engaging a cam form carried by a cam plate secured to the first plate, and there being a clearance between the wall of the bore in the cam shaft and a portion of the driven shaft which is received therein, with the exception of that region of the bore adjacent the portion of the cam shaft which is engaged in use by the cam follower, the engagement of the wall of the bore with the driven shaft in said region defining a first bearing for the cam shaft on the driven shaft, and a second bearing for the cam shaft on the driven shaft being defined by a region of said cam plate having therein an aperture through which said portion of the driven shaft extends.

3,861,172
COUPLING FOR COMBUSTION ENGINE

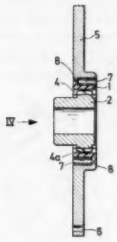
Heinz George Symann, Dortmund-Brakel, Germany, assignor to Kupplungstechnik GmbH, Hanover, Germany

Filed June 12, 1973, Ser. No. 369,245

Claims priority, application Germany, June 16, 1972, 2229418

Int. Cl. F16d *3/14*

U.S. Cl. 64—27 NM **2 Claims**



1. A tooth type coupling for connecting the flywheel of a combustion engine to the shaft journal of a unit to be driven, said coupling comprising a flange consisting of two concentrical parts, the inner part consisting of a synthetic material, the outer part consisting of a metal, bush-type spring elements extending axially between the two parts to provide a tension-proof connection between the parts, said inner part having a straight internal toothing, and a metallic coupling hub having an external toothing consists of arc-shaped and spherical teeth meshing with said internal toothing.

3,861,173
APPARATUS FOR CONTROL OF NEEDLE PUSHERS

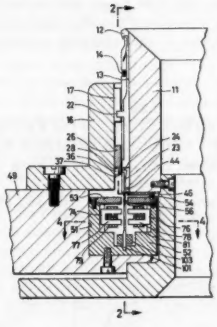
Wolf-Dieter Kinkelin, Behringstr. 3, 7412 Eningen, Germany

Filed Oct. 27, 1972, Ser. No. 301,319

Claims priority, application Germany, Nov. 6, 1971, 2155251

Int. Cl. D04b *15/78*

U.S. Cl. 66—50 R **24 Claims**



1. Apparatus for the control of needle pushers for knitting tools of a knitting machine comprising:

a needle bed having grooves therein,

knitting tools moveable to and fro in the grooves,

needle pushers having lower magnetizable portions having substantially circular cross-sections and moveable to and fro in the grooves for moving the knitting tools,

means covering at least a portion of the grooves and provided with knitting tool cam means and needle pusher cam means,

the needle pusher cam means and knitting tool cam means causing the needle pushers to move the knitting tools,

the needle pushers being moveable into different positions in accordance with different positions of knitting tool,

the needle pusher cam means having two camming surfaces for moving the needle pushers to two lateral different positions along the grooves,

pivot bearing means for pivoting the needle pushers,

needle pusher foot means on the needle pushers for pivotably engaging the needle pusher cam means except when the needle pushers have been pivoted into one of a plurality of pivot positions.

guide channel means for the lower portion of the needle pusher which is slightly wider than said lower portion,

said guide channel means having a central plane taking a substantially straight course and opening into a magnet chamber which widens in the direction of flight of the needle pushers,

first and second electromagnet means in the magnet chamber having pole pieces close to the opening to the guide channel and on both sides thereof, positioned to magnetically select by deflecting said lower magnetizable portions of the needle pushers and pivot said needle pushers with high selection frequency without contacting said lower magnetizable portions of the needle pushers in their flight path at normal working speeds.

the electromagnet means being energizable in accordance with a predetermined knitting pattern, for causing the needle pushers to pivot,

third and fourth magnet means following the first and second electromagnet means in the magnet chamber and producing a constant magnetic field symmetrical to the central plane of the guide channel means and positioned to magnetically influence the trajectory of said lower magnetizable needle pusher portions without contacting said lower magnetizable needle pusher portions in their flight path at normal working speeds,

covering foil means which cover the pole piece surfaces of said third and fourth magnet means,

multi-channel path-divider means for the lower portion of the needle pushers following the magnet chamber,

said first and second electromagnetic means and said third and fourth electromagnetic means being symmetrically located with respect to the central course of said guide channel means.

3,861,174
APPARATUS FOR KNITTING

Masaaki Kunisada, Anjo City, and Mituyoshi Mizutani, Kariya City, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed July 30, 1973, Ser. No. 383,517

Claims priority, application Japan, July 31, 1972, 47-76739; Oct. 18, 1972, 47-104652; Aug. 19, 1972, 47-96859[U]; Jan. 30, 1973, 48-13736[U]; Jan. 30, 1973, 48-13737[U]; Jan. 30, 1973, 48-13738[U]

Int. Cl. D04b

U.S. Cl. 66—60 **10 Claims**

1. A hand knitting machine having

a needle bed;

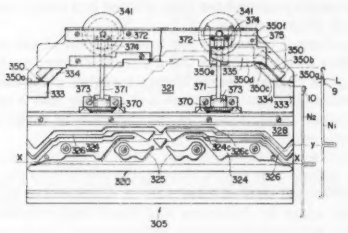
a plurality of sinkers forwardly protruding from the extremity of the needle bed and arranged in parallel and at regular intervals in a plane;

a corresponding number of latch needles alternated with the sinkers and having a free sliding fit on the needle bed so as to project beyond and to retract from the neighboring sinkers;

a stitch forming actuator movably supported on the needle bed so as to reciprocate along the longitudinal direction of the needle bed and engage with said needles to have the needles project beyond and to retract behind the sinkers to form the stitches; and

a loop transferring actuator movably supported on the needle bed so as to reciprocate along the longitudinal direction of the needle bed;

said loop transferring actuator comprising first cam means for causing the needles to protrude from and retract into the needle bed, and laterally shifting means adjacent to extremities of selected ones of the needles in abutably relation therewith in the protruding movement of the



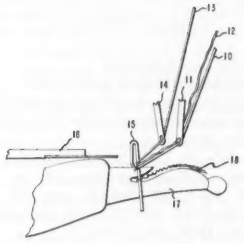
selected needles to thereby shift laterally horizontally said extremities substantially close to non-selected neighboring ones of the needles past but not over free ends of the neighboring sinkers, whereby the neighboring needle co-projects through the yarn loop on the selected needle and transferring of the yarn loop is performed from the selected needle to said neighboring needles by having the loop gotten behind the latch of the selected needle and then ridden over the closed latch thereof.

3,861,175

PROCESS FOR KNITTING TWO-BAR FABRICS FROM THREE WARP THREAD SETS

Robert Clyde Farmer, Newark, and Harold Frederick Hume, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 11, 1973, Ser. No. 369,118
Int. Cl. D04b *23/00*
U.S. Cl. 66—86 A **4 Claims**



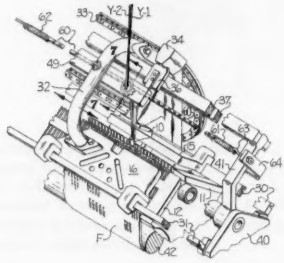
1. In a process of producing warp knitted fabrics having loop formations on a warp knitting machine having three sets of warp threads of which two sets are fed with a normal thread feed rate to form a firm structure in the knitted fabric while a third set of warp threads is knitted into the fabric and is constantly overfed relative to feeding for normal stitch formation, each of said sets of threads being fed to operating guide bars of said knitting machine, the improvement comprising feeding one of said two sets to one of two operating guide bars of said knitting machine; feeding the other of said two sets to the other operating guide bar of said knitting machine; and knitting said third set of threads by the same guides of one or the other operating guide bars of said knitting machine.

3,861,176

APPARATUS FOR TWISTING TOGETHER AND KNITTING YARNS

Joe R. McWhirter, McAdenville, N.C., and Donald O. Shepherd, Clover, S.C., assignors to Pharr Yarns, Incorporated, McAdenville, N.C.

Filed Apr. 9, 1973, Ser. No. 349,426
Int. Cl. D04b *11/18, 19/00*
U.S. Cl. 66—137 **3 Claims**



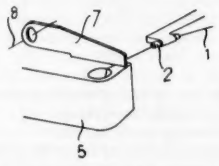
1. In a knitting machine including a bank of needles, stitch cams movable back and forth along said bank to successively move said needles through a stitch forming cycle, and a non-rotatable yarn feed finger movable with said stitch cams for simultaneously feeding a pair of yarns into the hooks of said needles as said needles are moved through said stitch forming cycle to form a course of stitch loops of both of the yarns with each back and forth movement of said stitch cams, the combination therewith of a rotatable member supported in closely spaced relationship above and independent of said yarn feed finger and movable therewith, spaced apart yarn guide passages extending through said rotatable member for guiding the yarns therethrough, and means for rotating said rotatable member in one direction throughout the entire length of movement of said stitch cams in one direction along said bank of needles and for rotating said rotatable member in the opposite direction throughout the entire length of movement of said stitch cams in the opposite direction along said bank of needles whereby said pair of yarns is twisted together in one direction and then in the opposite direction as said yarns are fed to and through said feed finger and to the hooks of said needles so that the pair of yarns is alternately twisted together in opposite directions in the alternate courses of the knit fabric.

3,861,177

PIVOTABLE SUCTION DEVICE FOR RETAINING THE THREADS IN A CIRCULAR HOSIERY MACHINE

Aramis Mazzi, Firenze, Italy, assignor to Nova Tec Establishment, Schaan, Liechtenstein

Filed June 11, 1973, Ser. No. 369,101
Int. Cl. D04b *15/54*
U.S. Cl. 66—145 S **3 Claims**



1. In a system for retaining the severed threads fed in the operation of conventional circular hosiery machines provided with thread-guiding means and thread-cutting means, the improvement consisting of a plurality of suction means, one

for each of the severed threads, positioned peripherically and externally of the needles bed of the hosiery machine and displaceable pivotably about a pivot point, so as to effect a reciprocating arcuate motion between the thread-guiding means and the thread-Cutting means.

3,861,178

CONTROL APPARATUS FOR CIRCULAR KNITTING MACHINE

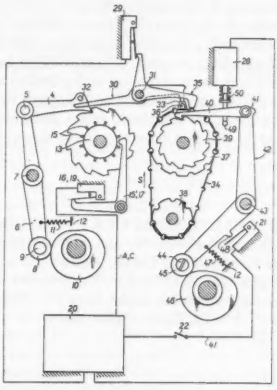
Ivo Kouklik, and Pavel Uhlir, both of Trebic, Czechoslovakia, assignors to Elitex Zavody Textilniko Strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed Mar. 20, 1973, Ser. No. 342,941

Claims priority, application Czechoslovakia, Mar. 23, 1972, 1922-72

Int. Cl. D04b *15/66*

U.S. Cl. 66—155 **3 Claims**



1. In a circular knitting machine provided with a control chain having an indexing mechanism for advancing said chain relative to the number of revolutions of the needle cylinder, a control drum having an indexing mechanism for turning said drum, the interval for indexing the control chain being controlled by the output of counters of an electronic computer having memory storage members providing a predefined program of operation in relation to the rotation of the needle cylinder operating a mechanical means by which the indexing of said chain is prevented during the given interval, said machine including a mechanical programming device for controlling the operation of the electronic computer comprising a program carrier having an active surface on which means for storing an adjustable program is provided, means for mounting said carrier so that the movement of the active surface corresponds to the rotation of the control drum, a plurality of pivotable levers scanning the means storing the adjustable program contained on the surface of said program carrier and switches arranged to be contacted by said levers when engaged by said adjustable program, said switches being connected to the memory members of the counters of the electronic computer.

3,861,179

APPARATUS FOR STEAMING WEARING APPAREL

Melvin C. Orchard, Salt Lake City, Utah, assignor to K. S. Cornaby, Salt Lake City, Utah

Filed Apr. 10, 1972, Ser. No. 242,664

Int. Cl. D06c *1/04*

U.S. Cl. 68—6 **7 Claims**

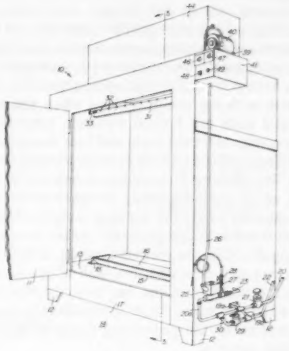
1. Apparatus for steaming wrinkles out of wearing apparel, comprising in combination:

an enclosed cabinet having means for access to the interior thereof;

means for suspending items of wearing apparel within the cabinet;

means for introducing air into the cabinet including an elongated aperture extending laterally along the cabinet bottom, through which exterior air can flow into the cabinet;

means for heating said incoming air comprising at least one U-shaped coil extending laterally along the aperture in



the cabinet bottom, and at least one elongate, V-shaped trough extending longitudinally along the aperture disposed between, and extending above, the lateral arms of the U-shaped coil; said coil being adapted for connection to a source of steam for heating the coil and the V-shaped trough;

means for introducing steam into the cabinet;

means for varying the composition of said steam from dry steam to wet steam; and means for exhausting said heated air and steam from the cabinet.

3,861,180

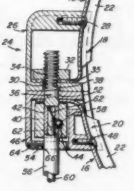
ELECTRIC METER LOCK RING

John R. Heckrotte, Sr., 1625 W. Fairmont, Phoenix, Ariz. 85015, and James P. Marcacci, 4041 E. Highland, Phoenix, Ariz. 85018

Filed July 25, 1973, Ser. No. 382,447

Int. Cl. G01r *11/04*; **F16l** *21/06*

U.S. Cl. 70—164 **3 Claims**



1. An electric meter lock ring, comprising, in combination:

a. an arcuate band having a pair of opposed ends arranged forming a split ring, the arcuate band being provided with parallel, codirectionally extending flanges arranged extending along the band between the opposed ends; and

b. means arranged at the opposed ends for locking same together, the means for locking including a locking member arranged on one of the opposed ends and means arranged on the other of the opposed ends for selectively

engaging the locking member and locking together the opposed ends, the means for engaging including a locking element and an associated key element, a threaded shank portion on said locking element, the locking element having an enlarged head provided with a cavity and an aperture in the enlarged head communicating with the cavity; the key element including a sleeve dimensioned to fit closely in the cavity, and being provided with a ball captively held in the sleeve and arranged to enter the aperture by movement of a longitudinal plunger slidably arranged within the sleeve in a direction parallel to the longitudinal axis of the plunger, the plunger defining a camming surface arranged for camming the ball into the aperture and rotatably connecting the key element to the locking element when the sleeve is arranged in the cavity, and a bore provided in the locking member and arranged to mate with the shank portion when the arcuate band opposed ends are locked together, whereby the shank portion may enter the bore and lock together the arcuate band opposed ends, the means for locking further including a first housing mounted on a one end of the opposed ends, and a second housing mounted on the other end of the opposed ends, the locking member being arranged within the first housing and the means for engaging being arranged within the second housing, a bushing arranged in an opening provided in a wall of the second housing spaced farthest from the one end, the bushing provided with a bore arranged for receiving the key element sleeve, and seal means for protecting the bushing against unauthorized removal.

3,861,181

KEYS

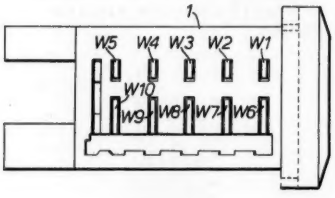
Thomas Edgar Needham, Birmingham, and Wilfrid David Rogers, Solihull, both of England, assignors to Wilmot-Breeden Ltd., Birmingham, England

Filed Apr. 16, 1973, Ser. No. 351,427

Claims priority, application Great Britain, Apr. 22, 1972, 18777/72; May 26, 1972, 24864/72

Int. Cl. E05b *15/14, 19/06, 29/06*

U.S. Cl. 70—364 R **5 Claims**



1. A double-entry key formed for different depths of insertion for the two entry positions and having different edge profiles, each profile comprising two series of cuts with the cuts of the two series alternating in each profile and the series respectively arranged for operation of each bank of wards of a double-banked ward locking device, the same series of cuts on the two edges being relatively displaced therealong by an amount equal to the difference between the two depths of insertion of the key.

3,861,182

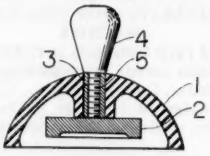
PROTECTIVE KEYHOLE COVER

Herb W. Skinner, 243 Kenwood Blvd., Windsor, Ontario, Canada

Filed Nov. 23, 1973, Ser. No. 418,414

Int. Cl. E05b *17/18*

U.S. Cl. 70—455 **1 Claim**



1. A cover for a car door or trunk keyhole which is normally exposed to freezing temperatures, comprising a cup made of rubber or similar plastic material; a round shaped permanent magnet of a diameter somewhat larger than the diameter of the keyhole face plate, centrally located within and towards the rear of said cup; in combination with a drilled and tapped boss extending from the center of said magnet, to which the said cup is hermetically attached; and a detachable handle being attached to the said cover by being screwed into said boss.

3,861,183

HYDRAULIC THRUSTING DEVICE OF ROLLING MILLS

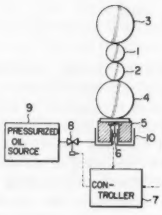
Kakichi Fukui, and Noriyoshi Sonobe, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 2, 1973, Ser. No. 356,434

Claims priority, application Japan, May 17, 1972, 47-48112

Int. Cl. B21b *37/08, 31/00*

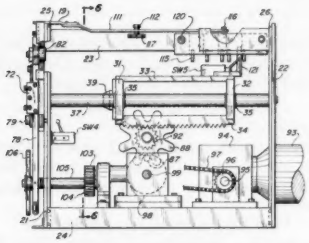
U.S. Cl. 72—21 **10 Claims**



1. A hydraulic thrusting device of rolling mills, comprising a cylinder-ram assembly for applying a thrust load on rolls by hydraulic pressure, an oil pressure generating source for supplying pressurized oil into the cylinder-ram assembly, means provided between the hydraulic pressure generating source and the cylinder-ram assembly for controlling the hydraulic pressure supplied to said cylinder-ram assembly, and a detector for detecting the roll position and for transmitting a signal to a controller of said hydraulic pressure controlling means, said detector including a stationary member and a movable member, said ram being provided with a vertically extending hollow portion, a cylindrical element having an upper and lower portion disposed in said hollow portion, the lower portion of said cylindrical element being fixed to the underside of the cylinder, the upper portion of said cylindrical element being disposed within said ram, means for sealing the upper portion of said cylindrical element within said ram, said movable member of the detector being disposed within the interior of said cylindrical piece, a rocker plate disposed on the top of said ram overiying said hollow portion, means for urging said movable member against said rocker plate, said movable member being movable within the interior of said cylindrical

element and said stationary member of the detector being supported by said cylindrical element.

3,861,184
BENDING APPARATUS FOR FORMING ELBOWS AND THE LIKE
Gary A. Knudson, 7485 Upham Ct., Arvada, Colo. 80002
Filed Sept. 27, 1973, Ser. No. 401,365
Int. Cl. B21d *9/14*
U.S. Cl. 72—30 **15 Claims**



15. In bending apparatus for forming elbows and the like from a downspout tube, the combination comprising:

a support frame having a front end plate and rear end plate with a hole in the front end plate through which a tube is inserted,

reciprocally movable ram means in the support frame for the tube including a frame structure slidably mounted on spaced support rods, said frame structure including a front plate and a rear plate having a rack gear along the lower portion thereof and an inner stationary mandrel on the front plate on which the leading end of the tube is placed for the movement of the tube by the ram means, co-operative outer and inner crimp die assemblies including an upper crimp die mounted above the tube on a reciprocally movable top plate having a pair of symmetrical, inclined slots and two symmetrical outer side crimp dies on opposite sides of the tube,

a center rod extending through the front and rear plates and inner mandrel supporting the inner die assembly in the hole of the front end plate at the front end thereof,

a pair of generally upright lever arms each carrying one of the outer side dies and pivoted between the upper and lower end portions thereof at spaced pivot points in a scissor-like action,

each lever arm having an upper cam roller disposed in an inclined slot in the top plate to urge the top plate downwardly when the upper end portions of the lever arms are urged toward each other,

each lever arm having a cam follower roller at a lower end portion,

an eccentric drive cam driven against said lower cam follower to move the lower end portions of the lever arms outwardly away from one another.

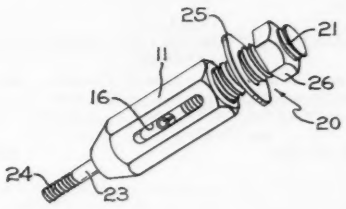
said lever arms having biasing means at the lower end portions to draw the lower end portions toward one another to an upright at-rest position,

a stepping advance mechanism for the ram means including a first rotary member having an axially extending drive member, eccentrically arranged in relation to the axis of rotation of the rotary member and an intermittently rotated second rotary member in the form of a star-like follower wheel having radial arms projecting outwardly at circumferentially spaced intervals with spaces between the arms sized to receive the eccentric drive member and engaging one of the radial arms to advance the follower wheel one arm for each revolution of the rotary member, a pinion gear rotating conjointly with the follower wheel and meshing with the rack gear for stepping the ram means a selected linear distance for each revolution of the first rotary member,

a drive for the die means and ram means including a first rotary drive shaft for driving the stepping advance mechanism and a second rotary drive shaft for driving said die actuating mechanism; and

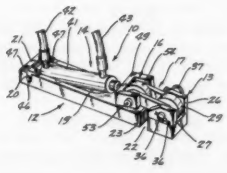
control means to automatically stop the drive when the tube has been crimped and advanced a preselected number of times to effect the desired angle in the tube.

3,861,185
UPSETTING TOOL
Charles G. Maddox, 1589 Huguelet St., Akron, Ohio 44305
Filed Oct. 25, 1973, Ser. No. 409,412
Int. Cl. B21j *15/04*
U.S. Cl. 72—114 **3 Claims**



1. A hand powered upsetting tool for outwardly expanding the shank of an internally threaded tubular Rivnut or Plusnut comprising a body, said body having a longitudinally extending smooth walled bore throughout the length thereof, said body having a polygonal outer surface for receiving a wrench, said bore being reduced in cross section at one end of said body, the juncture of said reduced bore with said main through bore presenting an annular abutment, an elongated member journaled in said bore of said body, said elongated member having an upper threaded portion and a lower reduced threaded stem portion, the juncture of said upper threaded portion and lower reduced stem portion provides a shoulder for engagement by said annular abutment, a nut threadedly mounted on said upper threaded portion for exerting axial pressure on said body, said body having slot means for communicating said smooth walled bore with the said outer surface thereof, and said elongated member having a pin extending transversely therethrough and projecting into said slot means of said body for interconnecting said body and said elongated member to prevent relative rotation therebetween but permit longitudinally movement therebetween.

3,861,186
PORTABLE BENDING APPARATUS
David H. Wigner, Jr., R.R. 1, Box 31, Moline, Ill. 61265
Filed Sept. 14, 1973, Ser. No. 397,252
Int. Cl. B21d *7/08*
U.S. Cl. 72—217 **9 Claims**



1. A portable bar bending apparatus comprising:

a portable base plate means having an opening formed in one end thereof;

shoulder means mounted at one end of said base plate means;

extendable means pivotally mounted at one end to the other end of said base plate means;

wheel means connected to the other end of said extendable means, said wheel means being movable by said extendable means, said opening disposed between said shoulder means and said wheel means when said extendable means is at its shortest length; and

linkage means pivotally connected at one end to said shoulder means and at the other end to said wheel means and operable upon extension of said extendable means to guide the movement of said wheel means by said extendable means arcuately upwardly and over said opening, and over said shoulder means.

3,861,187

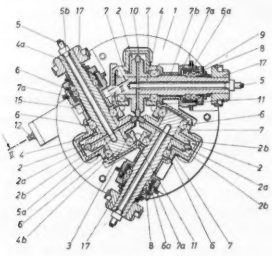
ROLLING STAND FOR ROLLING SUBSTANTIALLY ROD-LIKE STOCK

Kurt Leeuwestein, Duisburg-Neudorf, Germany, assignor to Firma Friedrich Kocks, Dusseldorf, Germany

Filed Nov. 29, 1973, Ser. No. 420,235

Int. Cl. B21b *13/10, 31/26*

U.S. Cl. 72—224 **9 Claims**



1. A rolling stand for rolling rod-like stock, such as wire, having at least three interchangeable driven working rollers which are disposed radially about the longitudinal axis of the stock to be rolled, an axial spindle in each said working roller all said spindles being journalled on each side of the roller in radial bearings which are in turn located in bearing bores in adjusting bushes eccentrically relative to the outer peripheral surfaces of the adjusting bushes which are rotatably journalled by their outer peripheral surfaces in housing bores in the rolling stand, all the adjusting bushes of each spindle being spaced axially from one another and connected together to be rotatable in synchronism as a unit whereby all the working rollers together with their spindles are jointly adjustable relative to the stock axis by means of a single adjusting spindle.

3,861,188

ROLLING PROCESS AND ROLLING STAND OF STEEL PLATE

Norimasa Kamit, and Ryozi Terakado, both of Hokkaido, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

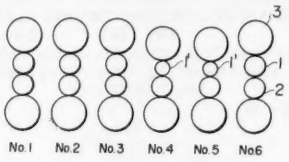
Filed Nov. 30, 1973, Ser. No. 420,565

Claims priority, application Japan, Nov. 30, 1972, 47-120057; Mar. 28, 1973, 48-35398

Int. Cl. B21b *1/24*

U.S. Cl. 72—234 **9 Claims**

1. A process for rolling a thin steel plate by means of a tandem rolling mill having a plurality of rolling stands, each stand having an upper working roll and a lower working roll comprising, reducing the plate through a plurality of front stands having equal-diameter working rolls, reducing the plate through at least one rear stand having working rolls of different diameters, rotating the working rolls of the first stand of said plurality so as to have the largest torque, and rotating the



largest of said working rolls of said at least one stand following said first stand so that the torque of said at least one stand is less than half of the torque of said first stand.

3,861,189

FOUR-HIGH MILL FRAME STRUCTURE

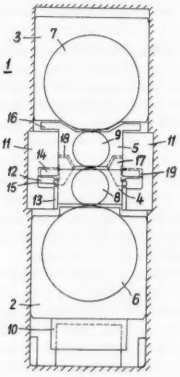
Herbert Lindermann, Rheinehausen, Germany, assignor to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Nov. 6, 1973, Ser. No. 413,236

Claims priority, application Germany, Nov. 9, 1972, 2254735

Int. Cl. B21b *31/08*

U.S. Cl. 72—238 **3 Claims**



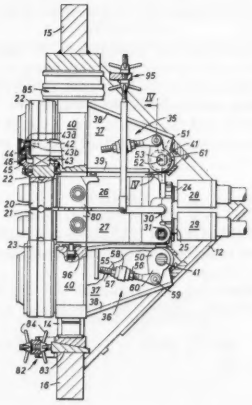
1. A four-high mill frame structure, which includes two oppositely located roller stands each being provided with window means and each comprising a lower mounting member and an upper mounting member in vertically spaced relationship to the pertaining lower mounting member, each two mounting members of one and the same stand being slidably arranged in the pertaining window means thereof, an upper and a lower supporting roller respectively supported by said upper and lower mounting members, each of said stands also comprising first and second working roller means superimposed upon each other and interposed between said upper and lower rollers of the pertaining stand, each of said stands also comprising first and second mounting means respectively supporting said first and second working roller means, a first and a second pair of guiding blocks respectively connected to said stands at the respective windows, the guiding blocks of each pair of guiding blocks respectively being connected to opposite sides of the pertaining window for guiding said first and second mounting means along vertical and horizontal planes, hydraulic actuating means associated with and arranged below said lower mounting members of said stands and operable selectively to lift said first and second mounting means with the working rollers supported thereby into an

elevated position corresponding to the working position of said first and second working rollers, said hydraulic actuating means also being operable selectively to lower said first and second mounting means with the working rollers supported thereby to a lowered position representing the working roller withdrawal and exchange position, and a first and a second pair of roller changing rail means respectively pertaining to said first and second pair of guiding blocks and being connected thereto for respectively slidably supporting said pairs of first and second mounting means of each of said stands being provided with male and female means operable in said working position of said first and second mounting means to automatically and to positively interlock and in said working roller removal and exchange position to be vertically disengaged from each other and to positively interlock in horizontal direction, said guiding blocks of each of said stands being provided with passage means, and said first and second mounting means being provided with extension means freely movable in the pertaining passage means in the axial direction of the pertaining working rollers when the latter with the pertaining first and second mounting means are in their lowered position.

3,861,190
ROLLING MILLS

Jack Maltby, and Dennis Stubbs, both of Sheffield, England, assignors to British Steel Corporation, London, England

Filed Jan. 9, 1973, Ser. No. 322,191
Claims priority, application Great Britain, Jan. 27, 1972, 3887/72
Int. Cl. B21b *31/18*
U.S. Cl. 72—247 **4 Claims**

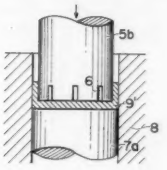


1. A rolling mill stand including:
a mill frame,
two drivable work rolls,
two work roll arms mounted in the mill frame, each arm carrying a respective work roll,
a first pivotal mounting means to which both work roll arms are mounted to permit pivotal movement of the work roll arms in a plane substantially parallel to a plane containing the axis of the work rolls, for adjustment of the gap between the work rolls,
two support rolls backing up the work rolls,
two support roll arms mounted in the mill frame, each arm carrying a respective support roll,
and a second pivotal mounting means to which one of said support roll arms is mounted, said second pivotal mounting means being spaced from said first pivotal mounting means and permitting pivotal movement of said one support roll arm in a plane substantially parallel to the plane of movement of the work roll arms for adjustment of the gap between the support rolls.

3,861,191
METHOD OF MANUFACTURING AN ARTICLE HAVING A PERIPHERAL WALL AND INTEGRAL THIN-WALLED PORTIONS EXTENDING RADIALLY INWARDLY THEREFROM

Kazuo Sato, Tokyo, and Soji Takahashi, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 21, 1972, Ser. No. 308,423
Claims priority, application Japan, Nov. 22, 1971, 46-93109
Int. Cl. B21c *23/20*
U.S. Cl. 72—267 **5 Claims**



1. A method of manufacturing an article having a cylindrical peripheral wall and integral thin-walled portions extending radially inwardly therefrom, said method including the steps of:
providing a female die means and male die means to form a semi-finished article, said female die means having a both open ended bore and an inner diameter which is substantially equal to the outer diameter of the cylindrical peripheral wall, said male die menas being disposed in said bore and comprising a first punch having an outer diameter substantially equal to the inner diameter of the cylindrical peripheral wall and having a plane end surface, and a counter punch having an outer diameter substantially equal to the inner diameter of said bore;
subjecting a disc-shaped workpiece disposed on said counter punch within said female die means to a rearward extrusion by said first punch to form a semi-finished cup-shaped article;
providing a second punch having an outer diameter substantially equal to the inner diameter of the cylindrical peripheral wall and formed with a plurality of radially extending grooves; and
subjecting said semi-finished cup-shaped article disposed on said counter punch in said female die means to forging by operating said second punch after the operation of said first punch to form an article having a cylindrical peripheral wall and integral thin-walled portions extending radially inwardly therefrom.

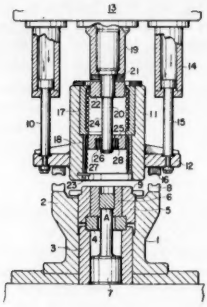
3,861,192
PRESS FOR COLD EXTRUSION OF DEEP-HOLED OR BOTTOMED CYLINDRICAL ARTICLES

Takamitsu Suzuki; Akio Takahashi; Shunichi Oya, and Mamoru Okamoto, all of Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed May 30, 1973, Ser. No. 365,058
Claims priority, application Japan, Feb. 6, 1973, 48-14246
Int. Cl. B21c *3/18*
U.S. Cl. 72—267 **7 Claims**

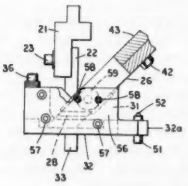
1. A press for cold extrusion of deep-holed or bottomed cylindrical articles including a lower die, an upper die movably displaceable in the vertical direction toward and away from said lower die, said lower die comprises a die holder, a die case located within said die holder and a die ring positioned within said die case and secured within said holder by

said case, said die ring arranged to receive and hold a solid cylindrical blank, said upper die includes a press ram, a punch mounted on said press ram and arranged to be forced into the blank so that the blank can skirt up around said punch and adopt a bottomed cylindrical form, wherein the improvement comprises a guide member for said punch, means for supporting said guide member from said press ram for movement with



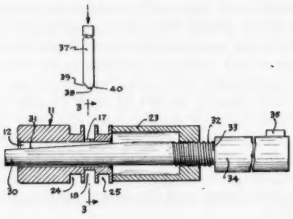
said press ram, said guide member arranged to engage said die case for maintaining the alignment of said punch and said die ring, means associated with said press ram and arranged to apply pressure downwardly against said die holder, and means laterally encircling said punch for vertical, slidable movement within said guide member for preventing distortion and buckling as said punch is forced into the blank in said die ring.

3,861,193
WORK SUPPORT FOR PRESS BRAKE
George G. Morguson, R. R. 2, New Paris, Ohio 45347
Filed Nov. 21, 1973, Ser. No. 417,897
Int. Cl. B21d *9/14*
U.S. Cl. 72—386 **7 Claims**



1. An apparatus for lifting and supporting sheet material as it is formed by a bending press of the type in which the moveable ram of the press carries a primary punch element which enters a cavity in a die element supported on the stationary bed of the press with the portion of the sheet material to be formed interposed between the punch and die elements, said apparatus comprising an auxiliary punch secured to the moveable ram of the press, and a work-lifting arm adjacent said auxiliary punch pivotally supported intermediate its ends with the portion on one side of its pivot underlying the sheet material being formed and the portion of said arm on the opposite side of its pivot being engaged by said auxiliary punch simultaneous with the initial engagement of said primary punch element with the interposed portion of the sheet material, continued movement of said auxiliary punch pivoting said arm to lift the sheet material as the portion interposed between said primary punch and die elements is formed by movement of the primary punch element into the die element cavity.

3,861,194
SPRAYER NOZZLE CONSTRUCTION
Frank A. Simmons, Hato Rey, P.R., assignor to Burgess Vibrocrafters, Inc., Grayslake, Ill.
Division of Ser. No. 125,129, March 17, 1971, Pat. No. 3,760,479. This application Apr. 5, 1973, Ser. No. 348,034
Int. Cl. B21j *13/02*
U.S. Cl. 72—461 **3 Claims**



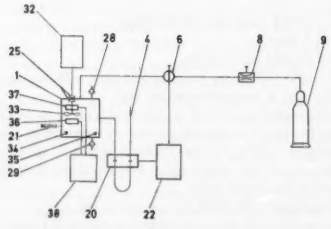
1. In the combination of two tools for use with a workpiece in the manufacture of a sprayer nozzle or the like wherein said workpiece comprises a body part having two ends and an opening extending therethrough from one end to the other, said body defining an orifice through said base wall adjacent one of said side walls, the improvement comprising:

one of said tools comprising an elongated anvil of a size to extend into said opening and abut the body part at the side of said opening opposite said orifice, the part of the anvil adjacent said orifice varies from a relatively thin section to a relatively thick section along the length of said anvil;

said anvil having a stop spaced along the length of the anvil from said part thereof, said part being of a size to abut one of said ends of the body part, said stop being adjustable along the length of the anvil; and

the second of said tools comprising a punch having a width at least almost as great as the diameter of said opening.

3,861,195
INSTRUMENT FOR MEASURING GAS METABOLISM OR CHANGES IN GASEOUS AMOUNTS
Siegbert Graf vom Hagen, Ernst-Ludwig-Strasse 17, 614 Bensheim, Germany
Filed Aug. 18, 1972, Ser. No. 281,802
Claims priority, application Germany, Aug. 18, 1971, 2141346
Int. Cl. G01n *31/00*; G05d *16/00*
U.S. Cl. 73—23 **15 Claims**



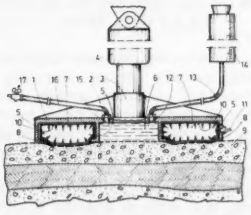
1. An apparatus for measuring gas metabolism or changes in gaseous amounts of a test sample in a chamber wherein makeup oxygen or another gas is supplied into the chamber over a long period of time from a constant pressure compressed gas source comprising:

a compressed gas container having a fine adjustment regulating valve;
a first chamber for containing the test sample;
a conduit between said first chamber and said fine adjustment valve;
a first shut-off valve to control said conduit;
a first pressure sensor to detect the difference between the pressure in the chamber and a first reference pressure;
means to open said first shut-off valve when the pressure difference reaches a first pre-adjusted level; and
means to close said first shut-off valve when said first reference pressure is reached in said first chamber;
an interim storage chamber containing compressed gas interposed between said compressed gas source and said first shut-off valve;
a second shut-off valve between said compressed gas source and said interim storage chamber;
a second pressure sensor to detect the difference between the pressure in said interim storage chamber and a second reference pressure;
said second reference pressure being atmospheric;
means to open said second shut-off valve when the pressure difference reaches a second pre-adjusted level;
said first pre-adjusted level being approximately one-tenth the magnitude of the second pre-adjusted level;
means to close said second shut-off valve when said second reference pressure is reached in said interim storage chamber; and
wherein the reference pressure for said first pressure sensor is the pressure in said interim storage chamber.

3,861,196
APPARATUS FOR MEASURING IN SITU THE PERMEABILITY OF A CIVIL ENGINEERING WORKING STRATUM

Domenico Domenighetti, Via Nosetto 6, 6500 Bellinzona, Switzerland

Filed June 26, 1973, Ser. No. 373,901
Claims priority, application Switzerland, July 3, 1972, 9960/72
Int. Cl. G01n *15/08*
U.S. Cl. 73—38 **6 Claims**



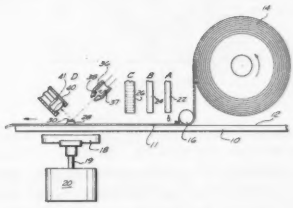
1. Apparatus for measuring the permeability of a planar surface, comprising wall means defining a downwardly opening central chamber, means to supply a fluid into said central chamber, means connected to said fluid supplying means for measuring the fluid flow rate with respect to time, means spaced from said central chamber wall means defining an annular chamber lined with a flexible bladder and surrounding said central chamber, means for separately introducing into said annular chamber a fluid under a preselected pressure for sealing off said central chamber against said planar surface, and means for holding the wall means defining said central and annular chambers against said planar surface in opposition to the pressure in said annular chamber.

6. A method for measuring the permeability of a planar surface, comprising positioning over said surface, a downwardly open central chamber surrounded by a rigid horizontal plate having a downwardly open annular chamber lined by a flexible bladder, selectively applying pressure to the plate, introducing into said annular chamber fluid under a preselected pressure to seal against said planar surface while restraining upward movement of said chambers, selectively introducing a fluid to be measured into said central chamber, continuously supplying further fluid to said central chamber, and measuring the flow rate of fluid with respect to time into central chamber as a measure of the permeability of the planar surface below said central chamber.

3,861,197
METHOD AND APPARATUS FOR DETERMINING THE VISCOSITY OF A LIQUID SAMPLE

Stanford L. Adler, Monsey, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed June 29, 1973, Ser. No. 375,223
Int. Cl. G01n *11/14*
U.S. Cl. 73—59 **20 Claims**

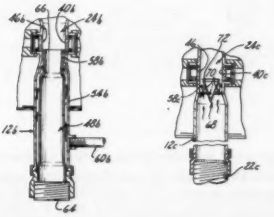


1. A method of determining the viscosity of a liquid sample, comprising:
supporting with a stationary support a volume of the sample with an exposed surface thereof forming a meniscus;
placing a wafer on said meniscus for support thereon;
rotating the wafer to spin the wafer on said meniscus of the sample and establish motion in the sample; and
monitoring by reflectance the rate of rotation of the wafer as an indication of the viscosity of the sample.

3,861,198
FLUID ANALYZER WITH SELF-CLEANING VIEWING WINDOWS

James J. Shea, Dearborn Heights, Mich., assignor to Gam Rad, Inc., Detroit, Mich.

Filed Nov. 3, 1972, Ser. No. 303,631
Int. Cl. G01n *21/26*; **G02b**
U.S. Cl. 73—61 R **10 Claims**



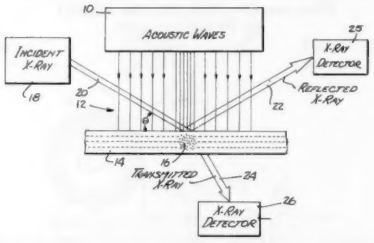
1. A fluid analyzer comprising an annular, elongated flow tube, said tube having at least one window whereby the fluid can be analyzed, and flow means operatively connected to said flow tube for directing fluid flow across the surface of said window in said tube whereby said surface of said window will be maintained clean, said flow tube including means for transmitting the fluid to be analyzed through a first passageway past said window whereby the analyzed fluid can be viewed and

with said flow means comprising separate passage means for directing fluid across the surface of said window via a second passageway separate from said first passageway, said flow means comprising a different annular elongated tube supported within said flow tube and defining with said flow tube said first and second passageways.

3,861,199
ACOUSTIC IMAGING SYSTEM

Sarkis Barkhoudarian, 1730 Byron, Madison Heights, Mich. 48071

Filed Apr. 7, 1971, Ser. No. 132,123
Int. Cl. G01n *29/04, 23/20*
U.S. Cl. 73—67.5 R **18 Claims**

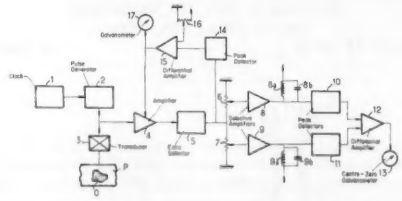


1. An ultrasonic imaging system comprising a crystalline face plate for receiving an acoustic pressure pattern image impinging thereon, the lattice structure of said crystalline face plate being distorted by the incidence of said acoustic pressure pattern, means for impinging a beam of penetrating radiation upon said plate at an angle with respect to the plane of said plate, and means for detecting the diffraction pattern of said beam corresponding to the acoustic image on said plate.

3,861,200
METHOD AND INSTRUMENT FOR ANALYSING MATERIALS BY ULTRASONIC PULSES

Jacques Dory, Coupvray, Esbly, France, assignor to Realization Ultrasoniques, Meaux, France

Filed Jan. 17, 1973, Ser. No. 324,288
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 R **4 Claims**

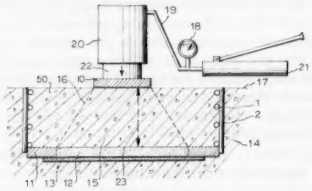


1. An apparatus for ultrasonic testing or measurement of the absorption coefficient of a material, said apparatus comprising generator means for generating recurrent electric pulses, transducer means, connected to said generator means, for converting said recurrent electric pulses into recurrent acoustic pulses with a frequency spectrum covering at least lower and higher substantially spaced frequency bands, said transducer means being coupled to said material, whereby said acoustic pulses are transmitted within the said material and corresponding acoustic response pulses are received by the said transducer means and converted into electric response pulses, amplifier means having an input connected to the transducer means and an output, first and second selective amplifier means connected to the output of said amplifier means, said first and second selective amplifier means including means to select the lower and higher frequency bands, respectively and having each an output, a differential amplifier having two inputs respectively connected to the respective outputs of the first and second selective amplifier means and an output, and a centre-zero galvanometer connected to the output of the differential amplifier, said selective amplifier means comprising voltage adjusting means.

3,861,201
METHOD AND APPARATUS FOR EARLY STRENGTH TESTING OF IN-PLACE CONCRETE

Franz Kaindl, Innsbruck, Austria, assignor to Owen Richards, Chevy Chase, Md., a part interest

Filed June 8, 1973, Ser. No. 368,325
Int. Cl. G01n *33/38*
U.S. Cl. 73—88 C **29 Claims**



1. The method of testing the strength of a body comprising a setting substance, such as concrete, having a separable component such as a coarse grain aggregate affecting the accuracy of said testing, comprising the steps of, selecting in said body a test site portion, eliminating said separable component from the test site, and testing the strength of said body located within said test site.

3,861,202
METHOD OF DETECTING PRESSURE UNIFORMITY

Francis John Wieloch, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 26, 1972, Ser. No. 301,023
Int. Cl. G01n *33/00*
U.S. Cl. 73—88 R **5 Claims**

1. A method of detecting pressure uniformity between adjacent contacting pressure surfaces comprising:

a. placing between said contacting surfaces a sheet of paper which comprises paper making fibers having incorporated therein a low density bulking agent in an amount of up to about 10 percent by weight of said fibers;

b. pressurizing the surfaces into pressurized contact to cause deformation of said paper in areas of higher pressure between said surfaces whereby a loss of caliper occurs across said sheet, the loss in caliper corresponding to areas on said contacting surfaces of higher pressure; and

c. measuring the deformed paper.

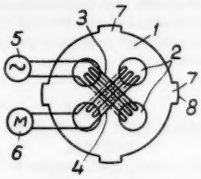
3,861,203
MAGNETOELASTIC TRANSDUCER

Orvar Dahle; Folke Von Knorring, both of Vasteras, Sweden, and Nils Gylen, deceased, late of Vasteras, Sweden (by Lilly Gylen, administratrix), assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 27, 1972, Ser. No. 318,908
Claims priority, application Sweden, Jan. 3, 1972, 5/72
Int. Cl. G01b *7/24*
U.S. Cl. 73—88.5 R **10 Claims**

1. In combination with an object in which forces are to be measured, a magnetoelectric transducer for measuring mechanical stresses in said object, said object having a hole

therein, said transducer comprising a disc-shaped core of magnetostrictive material which is provided with four channels perpendicular to the plane of the disc, said channels being arranged substantially at the corners of a square figure, windings in said channels for generating a magnetic flux in the core and for sensing the changes in the flux which occur when the



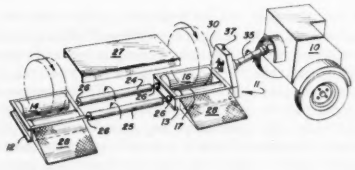
core is affected by mechanical forces, the transducer fitting tightly in the hole and four force transmitting elements between the periphery of the disc and the inside wall of the hole to transmit the stresses in the object to the core, said transmission elements being situated equidistantly from each other and symmetrically arranged in relation to the diagonals of said figure.

3,861,204

DYNAMOMETER TESTING RIG

Leland T. Fillingim, Lubbock, Tex., assignor to Northern Propane Gas Company, Omaha, Nebr.

Filed Sept. 23, 1970, Ser. No. 74,586
Int. Cl. G01l *5/13*
U.S. Cl. 73—117 **8 Claims**



1. In a motor vehicle testing apparatus including first and second horizontally spaced frame means provided respectively with first and second pairs of spaced, substantially parallel roll means, each pair of roll means being adapted to receive, cradle and be rotated by a driven wheel of a motor vehicle to be tested, and means mounting said pairs of roll means in said frames, the improvement comprising a portable vehicle testing rig for use with a portable power take-off dynamometer, said rig comprising:

a pair of connecting shaft means, including universal joint means at the end portions thereof, interconnecting laterally corresponding rolls of said first and second pairs of roll means;

a rotatable power transmitting shaft associated with one of said frame means; and,

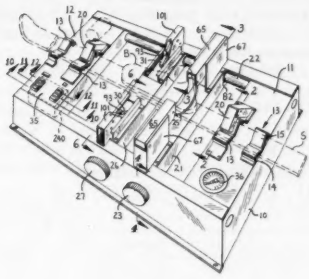
means for transmitting rotational motion of interconnected rolls of said first and second pairs of roll means to said rotatable shaft, whereby, during vehicle testing, said first and second frame means are vertically displaceable from one another, rotation of driven wheels of said vehicle to be tested imparts rotational motion to each roll of said first and second pairs of roll means, and said rotational motion of said rolls is transmitted to said rotatable power transmitting shaft to impart rotational motion thereto.

3,861,205

MACHINE FOR TESTING TOE AND HEEL CLAMPS ON SKI BINDINGS

Max Frey, Portland, Oreg., and Max A. Eberle, Upper Saddle River, N.J., assignors ,to Hydron Corporation, Portland, Oreg.

Filed Aug. 13, 1973, Ser. No. 387,689
Int. Cl. G01l *5/03*
U.S. Cl. 73—133 A **12 Claims**



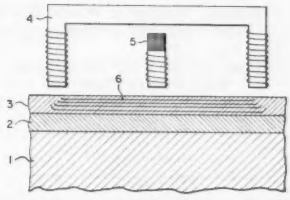
1. machine for testing ski bindings comprising an elongated frame, means for clamping a ski with a ski boot in said frame, a heel clamp testing device, means for adjusting said heel clamp testing device longitudinally in said frame, a toe clamp testing device operable on the right side of said boot, a toe clamp testing device operable on the left side of said boot, means for adjusting said toe clamp testing devices longitudinally in said frame, said heel and toe clamp testing devices all being operable with the ski clamped in a single fixed position by said clamping means, and means for applying a downward force on the toe of the boot during operation of said toe clamp testing devices.

3,861,206

METHOD AND DEVICE FOR MEASURING A STRESS EMPLOYING MAGNETOSTRICTION

Kazuyoshi Kawafune, and Koji Nakazawa, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 2, 1973, Ser. No. 346,894
Claims priority, application Japan, Apr. 3, 1972, 47-32662
Int. Cl. G01r *33/18*
U.S. Cl. 73—141 R **5 Claims**



1. In a method for measuring stress in a material by measuring a variation of the magnetostriction is a magnetostrictive material in response to stress applied to the material to be stress measured, the improvement comprising:

compensating for structural irregularities of the permeability of said magnetostrictive material by providing a film of a non-magnetic substance on a surface of the material to be stress measured, by providing a film having magnetostrictive characteristics over said film of non-magnetic substance and by passing magnetic flux through the magnetostrictive film; and

measuring the variation of magnetic flux in said magnetostrictive film in response to stress of said material to be stress measured,

said improvement further comprising applying a predetermined magnetic field to said magnetostrictive film during the step of providing said magnetostrictive film over said non-magnetic film to effect magnetic anisotropy to said magnetostrictive film.

3,861,207

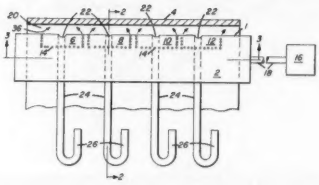
APPARATUS FOR MEASURING WEB TENSION

Eugene H. Barbee, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,974

Int. Cl. G01l *5/08*

U.S. Cl. 73—144 **6 Claims**



1. Apparatus for measuring the tension in a web, which apparatus comprises:

a. an arcuate surface over which the web is passed, said surface having apertures through which a fluid is supplied under pressure to provide a supporting fluidic cushion between the under surface of the web and said surface, said apertures being arranged in at least one closed, continuous pattern;

b. supply means for continuously supplying said fluid under pressure to said apertures;

c. at least one pressure tap hole in said surface, said pressure tap hole being positioned within the space enclosed by said closed, continuous pattern of said apertures; and

d. pressure measuring means in communication with said pressure tap hole for indicating the pressure of said fluid in said fluidic cushion in the vicinity of said pressure tap hole.

3,861,208

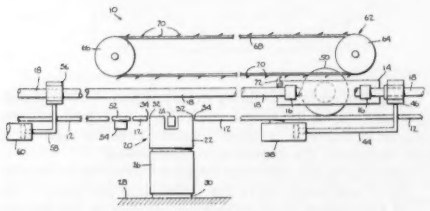
TIRE TESTING MACHINE

Seymour A. Lippmann, Huntington Woods, and Harold L. Stiller, Grosse Pointe Park, both of Mich., assignors to Uniroyal Inc., New York, N.Y.

Filed Dec. 12, 1973, Ser. No. 424,124

Int. Cl. G01n *17/02*

U.S. Cl. 73—146 **25 Claims**



1. Apparatus for effecting measurement of forces exerted by a pneumatic tire against a surface along which the tire is rolled at an interface between the tire and surface, said apparatus comprising:

a. an elongate bed;

b. carriage means for supporting a pneumatic tire in rolling contact with said bed;

c. support means shiftably supporting said carriage means for displacement relative to said bed;

d. shifting means for displacing said carriage means relative to said bed; and

e. load-sensing means for measuring forces exerted by the tire against said bed, said load-sensing means being disposed relative to said bed at a location over which the tire is adapted to roll when said carriage means is displaced relative to said bed.

3,861,209

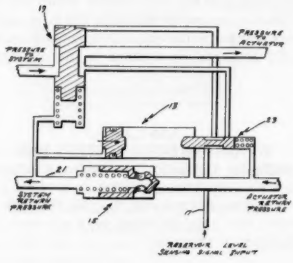
LOW PRESSURE TEST FOR RESERVOIR LEVEL SYSTEM

Gerald E. Amies, St. Louis, Mo., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Dec. 11, 1973, Ser. No. 423,845

Int. Cl. G01m *3/26*

U.S. Cl. 73—168 **2 Claims**



1. A low pressure test for hydraulic system reservoir level sensing automatically in aircraft while in flight comprising, a check valve positioned in a return pressure line and responsive to pressure changes therein, a pressure test piston in parallel relationship to said check valve, a shut off valve responsive to a rapid pressure drop in the hydraulic system of the aircraft, and a latching valve operatively engageable with said pressure test piston such that leakage in a sub-system of the aircraft hydraulic system lowers the reservoir level and produces a signal to energize said shut off valve causing the system return pressure to stroke said pressure test piston thereby operating said latching valve to prevent reconnection of the leaking sub-system.

3,861,210

FLOW METER PROVIDED WITH AN ORBITING SENSING ELEMENT

Tor Lennart Bernt Griverus, Nasbydalsvagen, 183 31 Taby, Sweden

Filed Oct. 30, 1972, Ser. No. 302,038

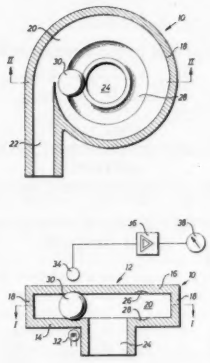
Claims priority, application Sweden, Nov. 10, 1971, 14334/71

Int. Cl. G01f *3/08*

U.S. Cl. 73—194 C **15 Claims**

1. In a flow meter for liquid media, gaseous media and multi-component media, both Newtonian and non-Newtonian, including housing means defining a chamber therein and provided with inlet means and outlet means communicating with said chamber and through which a medium is caused to flow to measure or check one or more of its flow parameters, said housing means being so constructed that the medium during its passage through said chamber is imparted at least partially with a circulatory movement, and wherein there is arranged in the chamber a sensing element in the form

of a ball which is propelled by the flowing medium along a generally circular path in the chamber, and means arranged to measure the movement of the ball to determine the desired flow parameter, comprising the improvement wherein the ball is arranged to move freely in the direction of the tangential velocity component of the movement of the medium, while being positively and uninterruptedly guided along its circular path by engagement with a pair of spaced and mutually opposed continuous guide members which closely confine the ball therebetween, at least one of said guide members having a shallow guide groove formed therein which opens toward



the other guide member, said guide members being fixed relative to the housing means and formed such that a boundary layer flow is permitted thereover without being appreciably disturbed, the guide members being positioned on substantially diametrically opposite sides of the ball and arranged each to engage a narrow polar cap portion of the ball with a slight clearance therebetween such that the ball is positively held between the guide members without any other contact with the surrounding housing means while effecting a clearly definable and stable rolling movement along not more than two predetermined contact circles as defined on the opposed guide members.

3,861,211

ULTRA-LOW FLOW VELOCITY CURRENT METER

Rajinder N. Dewan, Suitland, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1974, Ser. No. 454,504
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 A **4 Claims**

1. A water current velocity measuring system; which comprises,

an x-y omnidirectional acoustical signal transmitter,

two orthogonal pairs of receivers each positioned relative to said transmitter for receiving acoustical signals from said transmitter,

a high frequency electrical signal producing means,

a carrier frequency producing means which receives an input from said high frequency electrical signal producing means which produces a subharmonic of said signal received from said high frequency electrical signal producing means,

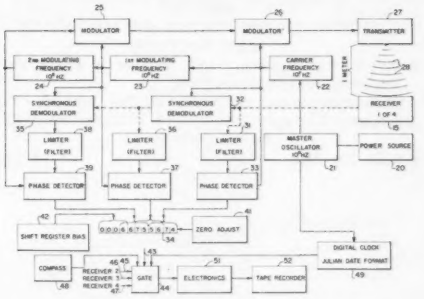
a second signal producing means which receives a signal from said carrier frequency producing means which produces a subharmonic of said carrier frequency,

a third signal producing means which receives a signal from said second signal producing means which produces a subharmonic of the output of said second signal producing means,

a first amplitude modulating means which receives inputs from said carrier frequency and second signal producing means which produces an output signal which is said subharmonic of said carrier frequency modulated by said subharmonic of said second signal producing means,

a second amplitude modulating means which receives inputs from said first amplitude modulating means and from said carrier frequency producing means which produces an output which is the carrier frequency with suitable amplitude modulation,

said output of said second amplitude modulating means directed into said transmitter for producing an omnidirectional sonic signal in accordance with said modulated



input signal with said sonic signal directed to said receivers which converts said sonic signal into electrical output signals,

separate means for receiving an output signal from each of said receivers separating the carrier frequency and modulating frequencies into separate signals,

phase detector means for making a phase comparison between the original signals and the signals from said receivers and producing a cyclic count of the phase difference between each different signal,

a phase shift register for registering the cyclic count for each of said different frequencies for each receiver,

a gate means,

said gate means receiving a signal from each of said phase shift registers and transmitting said signals in a preassigned order,

an electronic means for receiving said signal outputs from said gate and converting said signals into suitable signals for recording by a recording means, and

a recorder means for recording said signals produced by said electronic means.

3,861,212

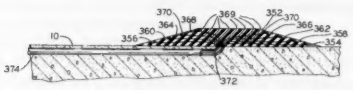
APPARATUS FOR CONTINUOUSLY MONITORING STANDING WATER ON AIRCRAFT RUNWAYS

Richard D. Henry, Hookstown Grade Rd., R.D. No. 1, Clinton, Pa.

Filed June 9, 1972, Ser. No. 261,198
Int. Cl. G01f *23/00*
U.S. Cl. 73—304 R **7 Claims**

1. Apparatus for continuously sensing and monitoring standing water at remote locations on aircraft runways and the like comprising a plurality of nonelectrically conductive blocks disposed at selected locations on the runway and superimposed thereon each such block having calibrated electrode sensor means embedded at spaced vertical calibrated posi-

tions within said block and having an exposed probe means at the outer surface of the block and which is insensitive to water except in the liquid phase thereof, such electrode sensor means being selectively energized in response to the water depth at a particular height at the preselected location, electri-

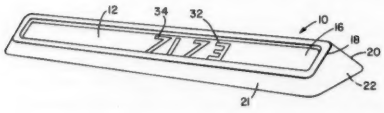


cal signalling means responsive to said electrode sensor means and electrically connected with said sensing means, and a display which is responsive to said electrical sensing means to provide a visual indication of the location and depth of standing water on the runways.

3,861,213
DIGITAL THERMOMETER AND METHOD OF MANUFACTURE

Robert Parker, Danville, Calif., assignor to Robert Parker Research, Inc, Livermore, Calif.

Continuation-in-part of Ser. No. 263,064, June 15, 1972, abandoned. This application Apr. 16, 1973, Ser. No. 351,220
Int. Cl. G01k *11/16*
U.S. Cl. 73—356 **5 Claims**



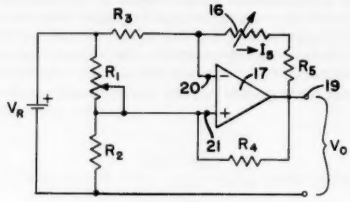
1. A digital thermometer readable by comparing the intensity of the visibility of the adjacent digits comprising: a flat support having a plurality of digital representations lineally disposed in a predetermined order of increasing value, said digits being delineated by transparent areas and cooperating opaque areas; a plurality of different microencapsulated liquid crystal compositions having different temperature response ranges substantially uniformly coated in substantially parallel bands over the combination of said transparent areas and cooperating opaque areas, said bands having a preselected approximately equal thickness, each of said coated liquid crystal compositions having a lower transition temperature below the numerical value represented by its digital representation and having an upper transition temperature above the numerical value represented by its digital representation, each coated liquid crystal composition having a temperature response range overlapping the temperature response range of the liquid crystal composition coated onto the transparent area of the next succeeding numerical value, the amount of overlap between adjacent digital representations being sufficiently consistent and of a magnitude so that the relative intensity of adjacent digits can be compared to estimate temperature.

3,861,214
TEMPERATURE MEASURING INSTRUMENT

Mustafa Siyahi, Yellow Springs, Ohio, assignor to The Yellow Springs Instrument Company, Inc., Yellow Springs, Ohio

Filed Nov. 19, 1973, Ser. No. 417,220
Int. Cl. G01k *7/24*
U.S. Cl. 73—362 AR **13 Claims**

11. A temperature measuring instrument comprising a differential amplifier, provided with an output terminal and a pair of input terminals, a thermally variable resistive element arranged in a feedback path from said output terminal to one of said input terminals, and a resistive element arranged in a

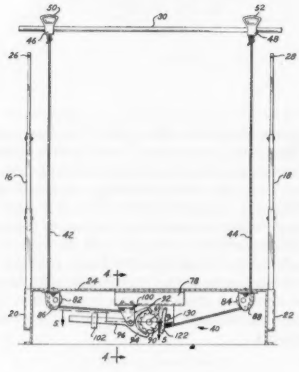


feedback path from said output terminal to the other of said input terminals.

3,861,215
EXERCISING APPARATUS SIMULATING WEIGHT LIFTING

Robert F. Bradley, c/o Micro-Circuits Company, New Buffalo, Mich. 49117

Filed Oct. 28, 1970, Ser. No. 84,757
Int. Cl. G01l *5/04*
U.S. Cl. 73—379 **13 Claims**

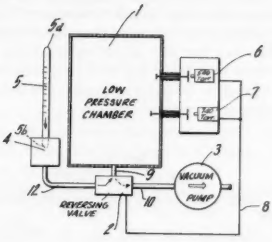


1. A body exercising apparatus simulating weight lifting, comprising a base for supporting the body thereon, a reel means connected to said base, a cable wound on said reel means and being extendable upwardly and retractable downwardly with respect to said base, a body engaging means connected to the upper end of said cable for pulling said cable upwardly and unwinding said cable from said reel, and a mechanically actuated escapement control mechanism connected to said reel means and including an escapement wheel and means for controlling the rate of rotation of said wheel, said mechanism being operated by the force exerted by the one using the apparatus for automatically limiting the rate of rotation of said reel means and the rate of unwinding of said cable when a force is applied to said cable in the unwinding direction.

3,861,216
MEASURING DEVICE HAVING MEANS FOR APPLYING A SELECTED PRESSURE TO A MEASURED VESSEL

Karl-August Wachter, Lubeck, and Horst Rabenecker, Bad Schwartau, both of Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Germany

Filed Aug. 16, 1972, Ser. No. 281,181
Claims priority, application Germany, Aug. 19, 1971, 2141496
Int. Cl. G01n *1/24*
U.S. Cl. 73—421.5 **5 Claims**

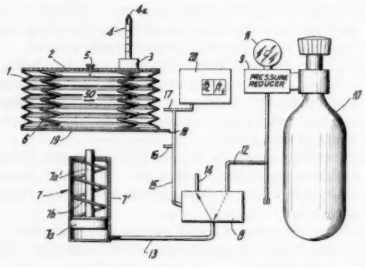


1. A measuring device, particularly for detecting gas and dust, comprising a connection mount having means for holding a measuring vessel and for applying a fluid pressure thereto, a pressure chamber connected to said mount for applying the fluid pressure to said mount, a pressure applying pump connected to said chamber, reversing valve means connected between said mount and said pump to said chamber, and at least one pressure sensing device connected to said chamber and to said valve for selectively and alternatively connecting said mount and said pump to said chamber at two pressure extremes.

3,861,217
GAS DETECTION DEVICE

Horst Rabenecker, Bad Schwartau, and Harald Kredel, Niedereschbach, both of Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Germany

Filed Mar. 8, 1973, Ser. No. 339,077
Claims priority, application Germany, Mar. 15, 1972, 2212363
Int. Cl. G01n *1/24*
U.S. Cl. 73—421.5 R **8 Claims**

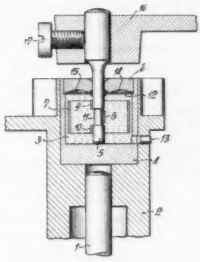


1. A device for aspirating air through a sample measuring tube, comprising a vessel defining an air chamber having a collapsible bellows-like wall and having a sampling tube attachment with a connection to said air chamber, spring means biasing said bellows-like wall to an opened expanded position, a drive piston adjacent said bellows-like wall being movable in a driving direction to contact said bellows-like wall and to collapse it to exhaust the gas in said chamber, said spring means moving said bellows-like wall to an expanded position after it is collapsed to bring sampling air through said sampling tube, a source of compressed air, and valve means connected between said source of compressed air and said drive piston to supply compressed air to said drive piston to drive it to move said bellows to a collapsed position, said valve means including a member operated by collapsing and expanding of said bellows to close and open the connection to said compressed air source.

3,861,218
ARRANGEMENT FOR DAMPING OSCILLATIONS WITHIN A LIMITED FREQUENCY RANGE

Werner Antritter, Villingen, and Norbert Helmschrott, Schwenningen, both of Germany, assignors to Keinzle Apparate GmbH, Villinger, Germany

Filed May 26, 1971, Ser. No. 147,126
Claims priority, application Germany, May 27, 1970, 2025957
Int. Cl. G01d *11/12*; G01p *3/26*
U.S. Cl. 73—430 **7 Claims**



1. An oscillation damping arrangement comprising stationary support means; measuring means angularly displaceable relative to said stationary support means and representing in the displaced position a measured value; a first damping element in the form of a container fixedly secured to one of said means, and the other of said means having a fixedly secured portion extending into said container; liquid filling said container; a second damping element located within the liquid in said container; and friction brake means frictionally connecting said second damping element to said fixedly secured portion of said other means in said container, so that said friction brake means slips only above a predetermined frequency range of oscillation of said measuring means whereby relative damping movement of said first and second damping elements and damping of said measuring means does not take place above said predetermined frequency range, while the oscillations of said measuring means are fully dampened within said predetermined frequency range.

3,861,219
METHOD FOR MEASURING HEAT AND PRESSURE CHARACTERISTICS OF FUSING APPARATUS

James A. Hendrickson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 14, 1973, Ser. No. 370,182
Int. Cl. G01n *17/00*; G01d *21/00*
U.S. Cl. 73—432 R **6 Claims**

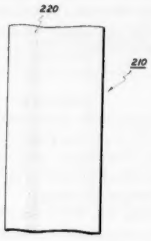
1. A method of measuring heat and pressure characteristics of a fusing nip between heat and pressure fusing rolls comprising the steps

forming a toner pattern on a first strip of support material,

positioning second strip of support material in overlying relationship with said first strip,

inserting said first and second strips between heat and pressure fusing rolls while spaced apart,

closing the fusing rolls to form a nip at operating conditions for a predetermined time,



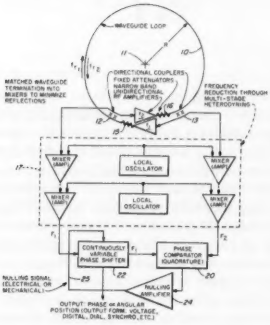
separating the rolls and removing said strips from the fusing rolls, and

separating said strips to effect offset of a portion of the toner pattern from said first strip onto said second strip to measure heat and pressure characteristics of the nip.

3,861,220
MICROWAVE GYRO

Harry D. Felsenthal, Jr., Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1973, Ser. No. 410,123
Int. Cl. G01p *15/08*
U.S. Cl. 73—505 **18 Claims**



1. Microwave gyro apparatus for accurately determining angular position, comprising:

a. at least one waveguide loop which lies in a plane perpendicular to the axis of rotation;

b. a plurality of amplifier means each connected to respective waveguide terminations for generating and maintaining different continuous wave signals of which at least one of said signals travels in an opposite direction to at least one another signal around said at least one waveguide loop, each said amplifier means having suitable bandwidth for selecting a desired integral number of wavelengths in the waveguide loop;

c. the exact frequency of said continuous wave signals in each direction also being controlled by waveguide loop effective length;

d. directional couplers coupling said waveguide terminations with said amplifier means, said continuous wave signals in both directions being isolated from each other by said directional couplers together with said amplifier means;

e. attenuation means connected to the output of each said amplifier means for absorbing unwanted oppositely directed signals to prevent backscatter and frequency locking, and to increase amplifier gains;

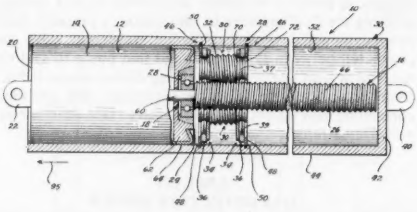
f. frequency reduction means for lowering the frequencies of said continuous wave signals prior to phase comparison, respective continuous wave signals from the waveguide being fed to said frequency reduction means via said directional couplers;

g. phase comparison means connected to two respective outputs of said frequency reduction means for determining the gyro angular position, angular velocity of the gyro apparatus about the axis of rotation resulting in a difference in frequency between two output signals, the difference between the two output signals being proportional to the time integral of the frequency difference and thus proportional to the angular position of the gyro relative to a reference position.

3,861,221
LINEAR ACTUATOR

Richard B. Stanley, 4 Coventry on Duxbury, Rolling Meadows, Ill. 60008

Filed Sept. 19, 1973, Ser. No. 398,587
Int. Cl. F16h *21/16*
U.S. Cl. 74—25 **12 Claims**



1. In a linear actuator comprising a threaded shaft member, a tubular member in substantial concentric telescoping relation to said shaft member, with one of said members being rotatably mounted and the other of said members being linearly movable, a bearing unit interposed between said members, and means for rotating said one member about its axis of rotation to move said other member linearly,

said bearing unit comprising:

a plurality of discrete rollers interposed between said members in circumambient, spaced relation about said shaft member and extending longitudinally thereof,

said rollers being aligned transversely of the shaft member and being free of engagement with said tubular member, said rollers being threaded intermediate the ends thereof and said roller threading and said shaft member threading being of equal pitch,

said rollers being free of end journaling and intergearing connections at their ends and having their threading in tractional rolling meshing relation with that of said shaft member,

with the threading of said rollers and said shaft member having similar but different pitch diameters with equal helical angles,

a pair of rollerway forming rings interposed between said rollers and said tubular member and spaced apart longitudinally of said members,

said rings being disjunctively related and free of engagement with said tubular member,

said rings respectively being disposed adjacent the respective ends of said rollers,

said rings and rollers being in tongue and groove type keying connection engagement adjacent said roller ends,

with said rollers being in free rolling tractional engagement with said rings at said connections of said rings with said rollers for rolling of said rollers about said rings, whereby on rotation of said one member said rollers each rotate about their respective axes and roll on and about said rings to planetate about said shaft member,

with said rings and rollers as a unit and said one member having relative linear movement on rotation of said one member in proportion to the difference between said pitch diameters of said shaft member threading and said roller threading,

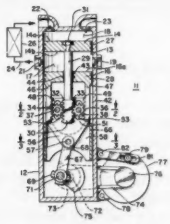
and means for keying said rings to said tubular member for effecting linear movement of said other member on said relative linear movement on rotation of said one member.

3,861,222

COUNTERBALANCED FIXED STROKE COMPRESSORS

Anton Braun, 6421 Warren Ave., Minneapolis, Minn. 55435, and Oswald Thun, Recklinghausen, Germany, assignors to said Braun, by said Thun

Filed Apr. 30, 1973, Ser. No. 355,705
Int. Cl. F16h *21/22*
U.S. Cl. 74—44 **20 Claims**



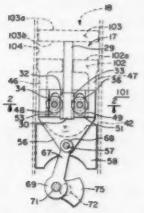
1. A counterbalanced fixed stroke piston machine comprising a housing, a first movable member serving as a slider member supported for straight-line reciprocating movement in the housing with its center of gravity moving along a desired longitudinal axis thereof, a second movable member serving as a counterbalancer member also supported for straight-line reciprocating movement with its center of gravity moving along the same longitudinal axis, interconnecting mechanism connecting the slider and counterbalancer members for counterbalancing proportional straight-line movement of such members in opposite directions to each other along said axis at all times, a counterbalanced single-throw rotary crankshaft member extending generally crosswise with reference to said longitudinal axis and having a single-throw crank portion and a counterbalancing portion thereon, a connecting rod having one end pivotally connected to said crank portion and a second end pivotally connected to the slider member for transmission of desired forces from said rotary crankshaft member to the reciprocating slider member, at least a first piston portion, with at least one piston face, associated with and reciprocating longitudinally along said axis as a unit as at least part of one of the slider and counterbalancer members, said first piston portion being positioned along said longitudinal axis at a location beyond said crankshaft member and interconnecting mechanism, and said housing comprising a compressor cylinder portion having at least a first cylinder wall portion positioned along said longitudinal axis beyond said crankshaft member and interconnecting mechanism, said first piston portion reciprocating along said axis within said first cylinder wall portion, and said one piston face serving as a movable compressor piston face providing one movable end wall of at least a first compression chamber within the cylinder portion.

3,861,223

FIXED STROKE PISTON MACHINES WITH IMPROVED COUNTERBALANCING AND DRIVING MECHANISM

Anton Braun, Minneapolis, Minn.; Oswald Thun, Recklinghausen, assignors to Anton Braun, Minneapolis, Minn.

Filed Apr. 30, 1973, Ser. No. 355,750
Int. Cl. F16h *21/27*
U.S. Cl. 74—44 **18 Claims**



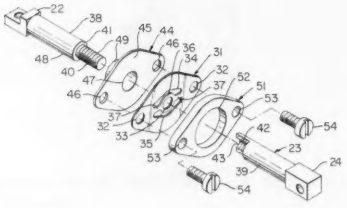
1. A counterbalanced fixed stroke piston machine comprising a first movable member serving as a slider member, a housing including guide means supporting the slider member for straight-line reciprocating movement with its center of gravity moving along a desired longitudinal axis, a second movable member serving as a counterbalancer member also supported for straight-line reciprocating movement with its center of gravity moving along the same longitudinal axis, interconnecting mechanism connecting the first and second movable members for counterbalancing, straight-line movement of such members in opposite directions to each other along said axis at all times, said housing comprising at least a first cylinder wall portion in coaxial alignment with said longitudinal axis, at least a first fixed stroke piston portion, with at least one piston face, movable within said cylinder wall portion and associated with and reciprocating longitudinally as a unit as at least part of one of the slider and counterbalancer members, thereby providing at least part of a first variable volume cylinder chamber within the first cylinder wall portion, a counterbalanced single-throw rotary crankshaft member extending generally crosswise with reference to said longitudinal axis and having a single-throw crank portion and a counterbalancing portion thereon, and a connecting rod having one end pivotally connected to said crank portion and a second end pivotally connected to the slider member for transmission of desired forces from one of said rotary crankshaft and reciprocating slider members to the other, said interconnecting mechanism having a symmetrical force transmitting and balancing arrangement including at least two gear members rotatably supported for rotation on supporting axes extending crosswise of said longitudinal axis and spaced symmetrically from each other around and outwardly from said longitudinal axis, an inner rack portion reciprocating longitudinally as a unit with one of said first and second movable members, said inner rack portion having at least two rigidly interconnected inner racks with teeth projecting outwardly away from each other and respectively engaging the corresponding gear members and guiding the inner rack portion for floating movement along said longitudinal axis between said gear members, and an outer rack portion having at least two outer racks reciprocating longitudinally as a unit with the other of said first and second movable members, said outer racks being spaced outwardly from and parallel to the inner racks and having teeth projecting inwardly and respectively engaging the corresponding gear members, said outer rack portion including a frame member moving as a unit with said outer racks and rigidly interconnecting said outer racks at a location close to said gear members and thereby guiding and supporting the outer racks on said gear members for floating movement along said longitudinal axis, and power means for applying a driving force to one of said crankshaft, slider and counterbalancer members.

3,861,224

FLEXURE MEANS FOR A CONTROL DEVICE OR THE LIKE

William T. Moon, Jr., Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed June 27, 1973, Ser. No. 374,110
Int. Cl. F16j *15/50*
U.S. Cl. 74—17.8 **19 Claims**



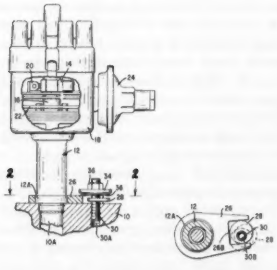
1. In a control device having a movable means and a control part to be moved in accordance with movement of said movable means, the improvement comprising a motion transmitting member having opposed ends, one of said ends of said member being interconnected to said movable means to be moved thereby, the other end of said member being interconnected to said control part to move the same, and flexure means carried by said device and being interconnected to said member to pivotally mount said member intermediate said ends thereof to thereby cause said member to pivot as said movable means moves and transmit such movement to said control part, said flexure means comprising a one-piece part having an opening therethrough receiving said control member therein to pivotally mount said control member to said device, said one-piece part having opening means passing therethrough adjacent to said opening to create flexure area means of said one-piece part adjacent said opening thereof.

3,861,225

EXTERNAL FINE TIMING ADJUSTMENT

Richard W. Mattson, Rossford, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Dec. 19, 1973, Ser. No. 426,376
Int. Cl. F16h *25/08*
U.S. Cl. 74—54 **4 Claims**



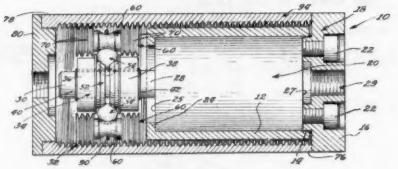
1. In an ignition distributor rotatably mounted in the block of an engine whose timing is to be adjusted, a bifurcated arm affixed to the distributor adjacent the engine block, a stud rotatably mounted on the engine block including a cam affixed thereto to cooperate with the bifurcated portion of the arm to move the arm angularly through a predetermined angular movement, means on the stud to cooperate with a hand tool to control the angular movement of the arm, and means cooperating with the stud to lock the parts in a fixed position.

3,861,226

LINEAR ACTUATOR

Richard B. Stanley, 4 Coventry on Duxbury, Plum Grove Village, Rolling Meadows, Ill. 60008

Continuation-in-part of Ser. No. 272,476, July 17, 1972, , which is a continuation-in-part of Ser. No. 148,615, June 1, 1971, abandoned. This application Mar. 23, 1973, Ser. No. 344,198
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **20 Claims**



1. A linear actuator comprising:
a shaft member,
a tubular member in substantial concentric telescoping relation to said shaft member,
one of said members being threaded,
a bearing unit interposed between said members,
and means for rotating one of said members,
said unit comprising:
means for defining a raceway about said shaft member,
a plurality of free rolling roller elements rolling about said raceway on actuation of said rotating means,
said elements each including an elongate shank having right ridge means in lateral load transmitting rolling meshing engagement with said threading,
with said element shanks each defining oppositely extending end portions forming the longitudinal ends of the respective roller elements, with said element ends being aligned transversely of said members,
said roller element ends being free of journaling relative to said members,
means for maintaining said ridge means of said elements in said meshing engagement with said threading,
and means keyed to the member that is other than said threaded member for restraining said elements from movement longitudinally of said members against lateral loads and engaging the shanks thereof to the exclusion of said ridge means thereof.

3,861,227

VARIABLE RATIO DRIVE MECHANISM FOR BICYCLES

Guilbert M. Hunt, Brecksville, Ohio, assignor to Tokheim Corporation, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 158,506, June 30, 1971, abandoned. This application Oct. 11, 1972, Ser. No. 296,649
Int. Cl. F16h *9/00*
U.S. Cl. 74—217 B **19 Claims**

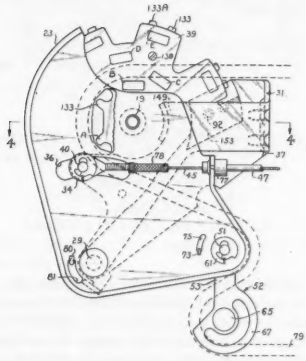
1. A variable ratio transmission mechanism for engagement with a flexible drive means including a variable diameter transmission member comprising:

a. a plurality of drive segments adapted for operative engagement with said flexible drive means, said drive segments being mounted on said variable diameter transmis-

sion member for movement between an axially retracted position and an axially projected position to establish a plurality of varying effective diameters;

b. a drive segment retracting means, mounted for pivotal movement between a first limit position located outwardly of the outermost circular row of said drive segments and a second limit position in the path of the next to the innermost row, so as to be positionable in the path of the projected drive segments of each row except the innermost, to retract said drive segments when said variable diameter transmission member is rotated;

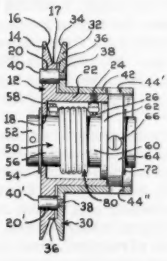
c. drive segment projection actuating means mounted for pivotal movement between a first limit position in the



path of the outermost row of projected drive segments and a second limit position in the path of the innermost row, so as to be positionable in the path of any one of said rows of said drive segments so as to project the corresponding drive segments when said variable diameter transmission member is rotated; and

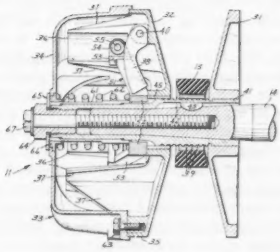
d. interconnecting means between said drive segment retracting means and said drive segment projection actuating means for simultaneous movement between their respective first and second limit positions to select the particular effective diameter to be defined by said drive segments, so as to establish the selected drive ratio of said mechanism.

3,861,228
TORQUE CONTROLLING SHEAVE
Hugh L. Adams, Box 13, Bassett, Ark.
Filed July 24, 1972, Ser. No. 274,491
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 M **11 Claims**



1. An improved variable pitch sheave having a torsion spring for transmitting torque, the sheave having a pair of discs which have generally opposing faces which are adapted in conjunction to receive a flexible member, the two discs being axially moveable with respect to each other and each disc having an elongated portion, one such elongated portion being an outer portion and the other being an inner portion, said outer portion being sleeved over said inner portion the sheave also having an elongated hub member positioned within the sleeved over portions and coaxial therewith, said hub adapted to receive the torsion spring thereabout and said torsion spring being fixed at one end to said hub member and at the other end to said inner portion further adapted to receive a shaft for driving.

3,861,229
CENTRIFUGAL CLUTCH
Perry M. Domaas, Minneapolis, Minn., assignor to Textron Inc., Providence, R.I.
Continuation of Ser. No. 301,210, Oct. 26, 1972, abandoned, which is a continuation of Ser. No. 82,633, Oct. 21, 1970,. This application Oct. 24, 1973, Ser. No. 409,138
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 E **17 Claims**



1. A centrifugal clutch comprising:

a. rotatable shaft means;

b. first rotatable means mounted on the shaft means and axially stationary thereon, the first rotatable means defining a first clutching surface;

c. second rotatable means mounted on the shaft means and axially movable thereon, the second rotatable means forming an enclosure and defining a second clutching surface cooperable with the first clutching surface;

d. third rotatable means mounted in an axially stationary position on the shaft means and within the rotatable enclosure;

e. one of said second and third rotatable means having a plurality of pairs of spaced members projecting toward the other of said second and third rotatable means, the opposed faces of each pair forming guiding surfaces which extend essentially parallel to the axis of the shaft means;

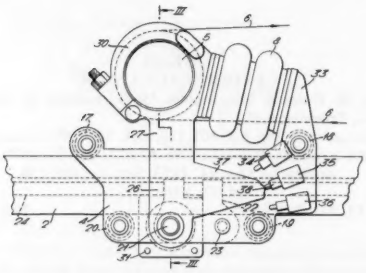
f. the other of said second and third rotatable means having a guiding member for each of said pairs, each guiding member constructed and arranged for cooperating, guiding engagement with the opposed guiding surfaces;

g. and centrifugal actuating means disposed within said rotatable enclosure for effecting axial movement thereof relative to the first rotatable means as a function of rotational velocity of the shaft means.

3,861,230
TENSIONING APPARATUS FOR BLANKET AND WIRES IN PAPER MACHINES

Oskar Brovoll, Oslo, Norway, assignor to Thune-Eureka A/S, Oslo, Norway

Filed Aug. 31, 1973, Ser. No. 393,333
Claims priority, application Norway, Sept. 20, 1972, 3374/72
Int. Cl. F16h 7/18; D21f 7/00
U.S. Cl. 74—241 3 Claims

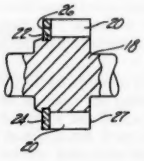


1. A web tensioning device comprising guide means, carriage means mounted for movement on said guide means, a tensioning roll for a said web, arms carrying said tensioning roll, means mounting said arms on the carriage means for pivotal movement about an axis parallel to the axis of the tensioning roll, fluid pressure means acting between said arms and said carriage means to swing said arms in a direction to tension the web, switch means having cooperating switch members on a said arms and on the carriage means for actuation upon predetermined pivotal movement of said arms, and means responsive to actuation of said switch means to move said carriage means on said guide means in a direction to restore said arms to a predetermined position relative to said carriage means, said arms having an operating nose thereon, said switch means comprising three end switches mounted on said carriage means for contact with said nose upon pivoting of said arms, a central one of said three switches deactuating said carriage moving means when said predetermined position of said arms relative to said carriage means is reached, and the other two switches actuating said carriage moving means for movement in respectively opposite directions on said guide means.

3,861,231
GEAR TEETH REINFORCEMENT

Erwin F'Geppert, Novi, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 27, 1973, Ser. No. 419,323
Int. Cl. F16h 57/00, 1/20, 55/00
U.S. Cl. 74—410 10 Claims

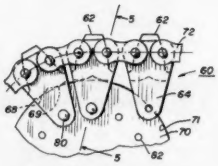


1. In a gear comprising a circular gear body having an endless edge surface bounded by endless side faces; and tooth-forming grooves machined in the edge surface from one side face of the body to the other side face of the body: the improvement comprising an endless separately formed tooth-reinforcement ring having rigid connections with each tooth outwardly of the tooth root surface, whereby loads applied to each tooth are transmitted to the ring and to the other teeth.

3,861,232
TRANSMISSION MEMBER UTILIZING PIVOTALLY INTERCONNECTED PREFORMS

Ben Bravin, 215 W. 88th, New York, N.Y. 10024

Filed Oct. 5, 1973, Ser. No. 404,132
Int. Cl. F16h 55/30, 55/12
U.S. Cl. 74—446 24 Claims



1. A transmission member which is sequentially assembled to provide the engaging portion of a positive power transmitting member in which said member has a profiled intermediate section adapted to cooperatively engage the profiled portions of a cooperatively engaged transmission member, said assembled power transmitting member including: (a) a support member having a prepared support means of selected determined width; (b) a preform having a midportion containing a positive power transmitting profile formed in its outwardly facing portion, said profile being a tooth, a groove and the like, said preform having at least two means for precisely engaging the support member to provide a determined support of the power transmitting preform, said preform having opposite side plate portions secured to its midportion, the side plate portions establishing guide means for seating the preform on the support member when the preform is in mounted condition on said support member; (c) means formed in the side plate portions for pivotally interconnecting one preform to an adjacent preform, said means establishing a precise spacing of one preform to an adjacent preform, and (d) means for mounting the preform in a positively seated and supported condition on the support member and to retain the pivotal connections in a fixed and tightened condition to establish a fixed positioning of the preform on the support member.

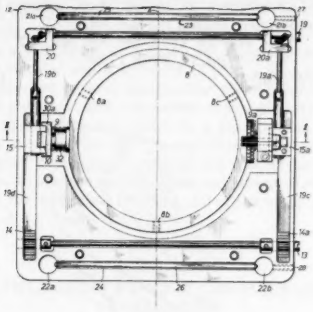
3,861,233
POSITIONER FOR ADJUSTING INCLINATION AND POSITION OF AN OBJECT FROM ONE DIRECTION

Takehiko Miyamoto, Tsuchiura, Japan, assignor to Takachiho Koeki Kabushiki Kaisha, Osaka, Japan

Filed Apr. 12, 1973, Ser. No. 350,485
Claims priority, application Japan, Apr. 18, 1972, 47-38296
Int. Cl. G05g 11/00
U.S. Cl. 74—479 7 Claims

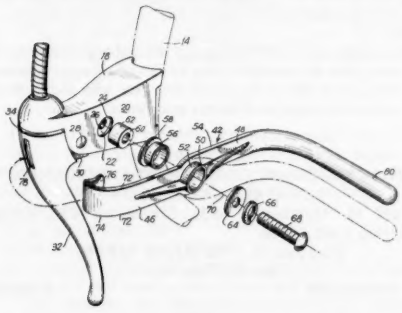
1. A positioner comprising, a support element on which an object to be positioned in three dimensions is disposed, means defining an axis of rotation for said support element terminating in two axially spaced gear sectors for tilting said axis of rotation about a second axis normal to the axis of rotation, means comprising gear means meshing with said gear sectors for tilting said axis of rotation, means to translate said means defining said axis of rotation to translate said axis of rotation along said second axis in two opposite directions, means to translate said means defining said axis of rotation laterally along said axis of rotation thereby to translate said support

element laterally in opposite directions, and means to rotate said means defining said axis of rotation about said axis of



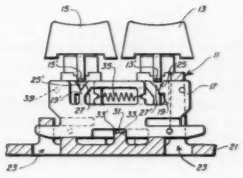
rotation, whereby said support element is adjustably positionable in three dimensions.

3,861,234
BRAKE LEVERS FOR BICYCLES
Martin Cristie, Brooklyn, N.Y., assignor to Stelber Industries Inc., Valley Stream, N.Y.
Filed May 29, 1973, Ser. No. 364,232
Int. Cl. B62k *23/06*; B62l *3/02*
U.S. Cl. 74—480 R **7 Claims**



1. For use in a bicycle which has a handlebar provided with an intermediate straight horizontal portion and a pair of opposed substantially U-shaped end portions projecting forwardly and downwardly from said intermediate horizontal portion, a pair of bracket means respectively fixed to and projecting forwardly from said U-shaped portions of said handlebar, a pair of primary brake levers respectively pivotally carried by said pair of bracket means and extending downwardly therefrom and situated forwardly of said U-shaped portions of said handlebar, and a pair of auxiliary brake levers pivotally connected to said pair of bracket means at inner side surfaces thereof which are directed toward each other, each of said auxiliary levers being connected respectively to said pair of bracket means for swinging movement with respect thereto about a predetermined axis and having an outer arm extending from the latter axis toward the primary brake lever and situated in part beside the same, each primary brake lever and outer arm of each auxiliary lever situated beside the same carrying an interconnecting means for interconnecting a primary brake lever and an auxiliary brake lever for movement together, and each auxiliary lever having an inner arm extending from its pivot axis in the direction opposite to said outer arm and terminating in an elongated free end portion extending substantially parallel to said horizontal straight portion of the handlebar at a distance close enough to said horizontal straight portion of said handlebar to be grasped by the hand of an operator when the hand is on the horizontal straight portion of the handlebar, so that the primary levers can also be turned by turning of the auxiliary levers, each outer arm of each auxiliary lever being symmetrical with respect to a plane which contains the pivot axis of each auxiliary lever so that the auxiliary levers may be interchangeably connected with the brackets and primary levers and arranged with said free end portions of said inner arms extending toward each other.

3,861,235
LATCHING KEY MECHANISM
Karl Wenderoth, Bad Vilbel, Germany, assignor to Adlerwerke vorm. Heinrich Kleyer, Nurenberg, Germany
Filed Oct. 29, 1973, Ser. No. 410,517
Claims priority, application Germany, Nov. 11, 1972, 2255336
Int. Cl. G05g *13/00*, *5/06*
U.S. Cl. 74—483 PB **11 Claims**



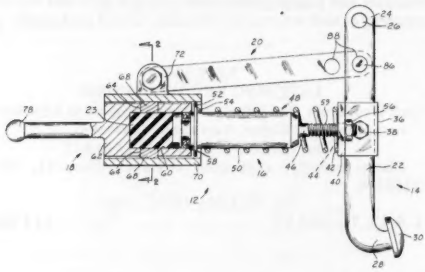
1. A key member comprising:
a first key adapted to be moved between a rest and an actuated position,
a second key adapted to be moved between a rest and an actuated position,
first latching means adapted to retain said first key in the actuated position,
second latching means adapted to retain said second key in the actuated position,
means resiliently biasing said first and second latching means toward each other,
means associated with said first and second latching means whereby when the first key is moved to the actuated position the second key will assume a rest position and when the second key is moved to the actuated position the first key will assume the rest position.

3,861,236
POSITIVE LOCK FORCE RATIO CHANGER
Jerrie K. Ramage, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.
Filed Nov. 12, 1973, Ser. No. 415,263
Int. Cl. G05g *1/14*
U.S. Cl. 74—512 **4 Claims**

1. A force transfer mechanism comprising:
push rod means having a bore therein with a plurality of radial openings extending from said bore to the periphery of said rod means;
pad means located in said radial openings;
deformable means located in said bore and in contact with said pad means;
sleeve means surrounding said push rod means;
piston means located in said bore and in contact with said deformable means;
first lever means having a first end pivotally connected to a body and a second end through which an input force is transmitted;
linkage means pivotally connected to said first lever means a first distance from said first end and said sleeve means;
shaft means secured to said piston means and pivotally

attached to said first lever means a second distance from said first end; and

resilient means connected to said lever means and said piston means for initially transmitting said input force through said deformable means to move said push rod means, said resilient means being compressed by the input force upon movement of the push rod means, said



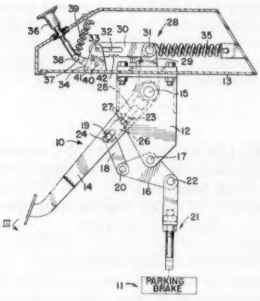
deformable means expanding in response to said movement thereby causing said pad means to engage said sleeve means andd secure said linkage means to the push rod means, said linkage means transferring any further input force to the push rod means to achieve a greater mechanical advantage than could be achieved by transmission of the input force through the resilient means.

3,861,237

PARKING BRAKE ACTUATING MECHANISM

William T. Mounts, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 29, 1973, Ser. No. 364,925
Int. Cl. G05g *1/04*
U.S. Cl. 74—516 **14 Claims**



1. A brake actuating mechanism comprising a stationary support,

a pedal actuated lever pivotally mounted on said support,

a bellcrank pivotally mounted on said support,

a link pivotally interconnected between said lever and a first arm of said bellcrank,

brake actuating means connected to a second arm of said bellcrank and adapted to be connected to a parking brake, and

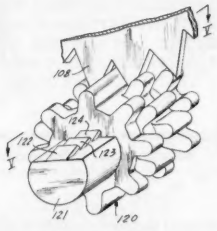
adjustment means for selectively adjusting the position of a first pivot pin, pivotally mounting said link on said lever, axially along said lever.

3,861,238

ADJUSTABLE TIME TIMING GEAR FOR TIMING APPARATUS

Robert W. Christianson, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 29, 1973, Ser. No. 364,732
Int. Cl. F16h *53/00*
U.S. Cl. 74—568 T **15 Claims**



1. In a timer apparatus of the type wherein a control mechanism is coupled to be driven by a motor via a gear train including first and second meshed gears, the improvement therein of means for varying the gear ratio of said first and second gears to vary the rate at which said motor drives said control mechanism, wherein:

said first gear including at least two sections at positions along its axis of rotation, each section including a different number of teeth and the teeth of each section providing the same mean diameter for said first gear as the teeth in each other section;

and

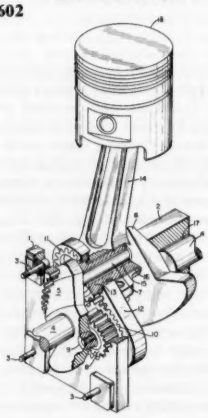
locking means for selectively and releasably locking one of said gears at positions along its axis of rotation to selectively mesh the teeth of said first gear with the teeth of said second gear at different gear ratios.

3,861,239

INTERNAL COMBUSTION ENGINE COMBUSTION CONTROL CRANKSHAFT

Edward M. McWhorter, 6931 Greenbrook Cir., Citrus Heights, Calif. 95610

Filed June 5, 1972, Ser. No. 259,958
Int. Cl. F16c *9/04*
U.S. Cl. 74—602 **3 Claims**



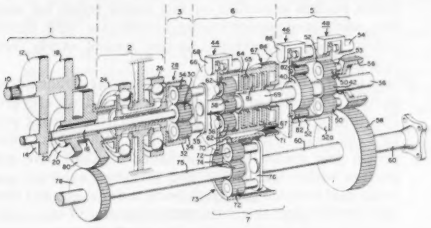
1. In an engine of the character described, an engine block, a plurality of axially aligned main journal shafts journalled in said engine block, an arm fixed on an end of each said main

journal shafts, said arms fixedly attached in pairs between said main journal shafts by a pin, said pair of arms forming a crank span, a first arm of said crank span being bent to form an instep, a non-circular internally toothed gear vertically placed over said instep and fixedly attached to said engine block, a non-circular pinion gear rotatably mounted on the inside of said first arm opposite said instep and engaging the teeth of said non-circular internally toothed gear, a gear belt pulley fixedly attached to said non-circular pinion gear, a second gear belt pulley rotatably mounted on said pin and engaging the first named gear belt pulley by a gear belt, an eccentric rotatably mounted on said pin and fixedly attached to said second gear belt pulley, a connecting rod having one end connected to a piston and the other end journaled on the said eccentric for raising and lowering said piston upon said pin on rotation of the main journal shafts.

3,861,240
MULTIPLE SPEED RANGE HYDROMECHANICAL TRANSMISSION

John M. Nolan, and Bradley O. Reed, both of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Mar. 2, 1973, Ser. No. 337,384
Int. Cl. F16h *47/04, 37/06*
U.S. Cl. 74—687 **7 Claims**



1. An infinitely variable hydromechanical transmission providing three synchronously changeable speed ranges, each with a distinct torque ratio between the output of the hydrostatic transmission and the output shaft, comprising:

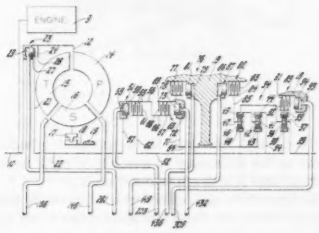
a. an input means **(1)**;
b. an output shaft **(60)**;
c. an intermediate shaft **(36)**;
d. a variable speed hydrostatic transmission **(2)** interposed between said input means **(1)** and said intermediate shaft **(36)** whereby said hydrostatic transmission is driven by said input means and said intermediate shaft is driven by said hydrostatic transmission;
e. selectable reduction gearing means **(5)** interconnecting said intermediate **(36)** and output **(60)** shafts;
f. a first three-element epicyclic gear set **(6)** having a first element **(38)** driven by the intermediate shaft **(36)**, a second element **(64)** provided with transfer means **(67)** to drive an element of a second three-element epicyclic gear set and a third element **(62, 66)** to complete the first epicyclic set;
g. a second three-element epicyclic gear set **(7)** having a first element **(70)** provided with a transfer means **(71)** driven by said transfer means **(67)** of said first epicyclic set, a second element **(72, 76)** connected to said output shaft **(60)** and a third element **(74)** connected to said input means **(1)** by mechanical means **(75, 78)** for transfer of input torque; and
h. clutch means **(44, 69)** operatively connected with said first epicyclic set for
   i. selectively locking the third element **(62, 66)** of said first set to ground to form a reaction point in said set to employ the gear ratio between the first **(38)** and the second **(64)** elements of the first set as reduction gearing between said intermediate shaft **(36)** and said transfer means **(71)** of said second epicyclic set,
   ii. selectively locking together two elements of said first set to cause common rotation of all three elements of said first set;

whereby said first and second epicyclic sets provide two ranges of different torque ratios between said hydrostatic transmission and said output shaft, each of which ratios is different from that provided by said selectable reduction gearing means **(5)** which provides a third range having a distinct torque ratio.

3,861,241
TRANSMISSION WITH SPEED RESPONSIVE SHIFTING IN REVERSE GEARS

Daniel M. Hancock, Southport, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 17, 1974, Ser. No. 434,229
Int. Cl. F16h *47/08*
U.S. Cl. 74—733 **9 Claims**



1. A transmission and control comprising: an input shaft; an output shaft; multiratio planetary gearing means including a plurality of drive means selectively engageable for establishing a plurality of forward drive ratios and a plurality of reverse drive ratios between said input and output shafts and control means including automatic speed responsive shift valve means and manual selector valve means operative in a forward position to control said automatic shift valve means to selectively engage said drive means to selectively establish said plurality of forward drive ratios in accordance with speed and in a reverse position to control said automatic shift valve means to speed responsively selectively engage said drive means to selectively establish said plurality of reverse drive ratios and manual overcontrol means selectively operable to provide a manual signal to said control means operative in forward selector valve means position to manually engage a higher forward ratio drive at any speed for push start operation and operative in reverse selector valve means position for manually establishing a higher reverse drive at any speed.

3,861,242
COMPOSITE GEAR STRUCTURE

Otis J. Adams; Osborne C. Dodson, both of Chagrin Falls, and Merritt A. Osborn, Chesterland, all of Ohio, assignors to Esco Manufacturing Company, Chagrin Falls, Ohio

Filed Nov. 7, 1973, Ser. No. 413,618
Int. Cl. F16h *3/52*
U.S. Cl. 74—750 R **6 Claims**

1. A composite gear assembly comprising, an input shaft and means to rotate said input shaft,

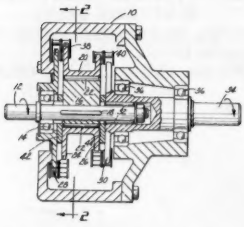
an eccentric mounted on said input shaft to rotate therewith,

a unitary hub member mounted for rotation on said eccentric and having first and second axially spaced toothed sprocket wheels,

a third sprocket wheel axially spaced from and adjacent to said first sprocket wheel and means to restrain said third sprocket wheel from rotation,

a fourth sprocket wheel journalled for rotation concentrically with said input shaft axially spaced from and adjacent to said second sprocket wheel and having an output shaft,

said first sprocket wheel having a lesser number of teeth than the third sprocket wheel and said second sprocket wheel having a lesser number of teeth than said fourth sprocket wheel, the difference in the number of teeth



between said first and third sprocket wheels being the same as the difference in number of teeth as between the second and fourth sprocket wheels.,

first endless drive link chain means drivingly interconnecting said first and third sprocket wheels and second endless device chain means drivingly interconnecting said second and fourth sprocket wheels,

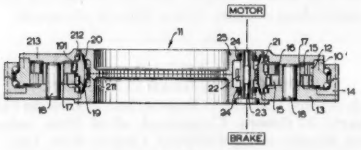
whereby rotation of the input shaft is translated to a speed reduced torque augmented output of said output shaft.

3,861,243

ROTARY CONNECTION FOR ROLL BODIES WITH TRANSMISSION

Hans Fleischer, Herdecke, Germany, assignor to Hoesche Werke Aktingesellschaft, Dortmund, Germany
schaft, Dortmund, Germany

Filed Apr. 30, 1973, Ser. No. 355,863
Claims priority, application Germany, Apr. 29, 1972, 2221211
Int. Cl. F16h *1/28;* **B66c** *23/84;* **F01c** *19/02;* **F04c** *15/00, 27/00*
U.S. Cl. 74—805 **6 Claims**



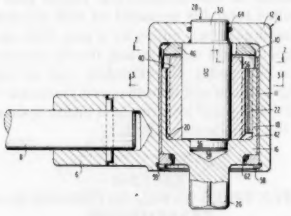
1. An antifriction bearing with built-in transmission having mass equalization especially as connection unit between a stationary and rotatable member, which includes in combination: an outer race ring adapted to be held stationary and a rotatable inner race ring, and a transmission system arranged within the confines of said inner race ring and comprising a spur gear drive and eccentric planetary gear means drivingly connected to said rotatable inner race ring for rotating the same, said spur gear drive being connectable to a prime mover.

3,861,244

TORQUE MULTIPLIER WRENCH

Warren Earl MacDonald, 40 Sunset Dr., Seekonk, Mass. 02771

Filed May 16, 1973, Ser. No. 360,814
Int. Cl. F16h *1/28;* **B25b** *17/00*
U.S. Cl. 74—805 **8 Claims**



1. A torque multiplier wrench comprising:

a casing having a cylindrical recess and an aperture in said casing axially aligned with said recess;

rotary output gear means having an axial bore defining a sleeve portion journalled by said casing recess for rotation, said sleeve portion having internal gear teeth, and an output power transmitting portion spaced axially from said sleeve portion;

rotary input means including an input power transmitting portion journalled in said aperture, and a drive arm portion projecting from said input power transmitting portion and being arranged eccentrically within said sleeve; pinion gear means being journalled on said drive arm portion within said sleeve and including external gear teeth, said external gear teeth being fewer in number than said internal gear teeth, the pitch diameter of said external gear teeth being less than the pitch diameter of said internal gear teeth, and the eccentricity of said drive portion being approximately one-half the difference between said pitch diameters;

a coupling ring interposed between said pinion gear means and said casing aperture for controlling movement of said pinion gear in response to rotation of said drive arm, said coupling ring and said casing including a first axially projecting lug-and-slot connection for resisting relative rotation between said coupling ring and said casing while permitting relative shifting movement therebetween in a first direction, said coupling ring and said pinion gear means including a second axially projecting lug-and-slot connection for resisting relative rotation between said coupling ring and said pinion gear means while permitting relative shifting movement therebetween in a second direction extending approximately at a right angle relative to said first direction, and said first and second axially projecting lug-and-slot connections being responsive to the application of an input torque to said input power transmitting portion, to guide said pinion gear means in an orbital path of travel, without rotation, and in driving contact with said internal gear teeth, wherein an output torque applied by said output gear means is greater than the input torque applied to said rotary input means.

3,861,245

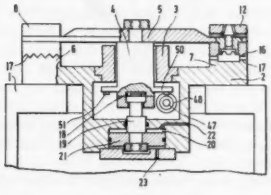
SWITCH PLATE MACHINE

Kurt Jauch, Schillerstrasse 1, 7445 Bempflingen, and Rolf Schafer, Reutlingen, both of Germany, assignors to said Jauch, by said Schafer

Filed Dec. 18, 1973, Ser. No. 425,926
Int. Cl. B23b *29/32*
U.S. Cl. 74—826 **3 Claims**

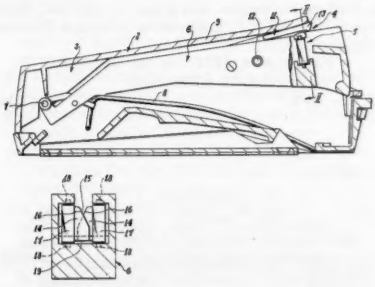
1. A switch plate machine for rotating workpieces to angularly spaced positions comprising,

a machine frame,
a switch plate which is journaled in the machine frame such tnat it can be periodically rotated by equal angular distances and can be reciprocated in the direction of its axis of rotation,
means for rotating the switch plate,
means for the axial reciprocating movement of the switch plate,
a plurality of thrust bearings which are arranged on the switch plate about its axis of rotation at equal angular intervals,



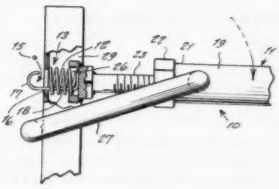
a plurality of workpiece receivers each of which is journaled in one of the thrust bearings parallel to the axis of rotation of the switch plate with radial tolerance and Hirth-type serration on its lower face,
and a plurality of centering members which are rigidly affixed to the machine frame around the turning axis of the switch plate at equal angular intervals and have Hirth-type serration on their top face which mate axially with the serration of the workpiece receivers after every turn of the switch plate and which can be brought into and out of engagement by an axial movement of the switch plate.

3,861,246
SHARPENING DEVICE
Campbell E. Waller, Lot 24, Kent Hughes Rd., Eltham, Australia
Filed Mar. 21, 1974, Ser. No. 453,422
Claims priority, application Australia, Mar. 26, 1973, 2739/73
Int. Cl. B23d *15/00*
U.S. Cl. 76—86 **8 Claims**



1. A blade sharpening device including two sharpening elements each defining a respective sharpening edge, said elements being arranged in overlapping relationship so that said sharpening edges define a sharpening recess between them, and pivot means connecting each said element to a support structure to permit each said element to move relative to the other, the axis of each said pivot means extending in a direction such that the angular relationship between adjacent surfaces of said overlapping elements varies according to the relative pivotal positions of said elements.

3,861,247
WIRE FENCE CONNECTOR
Fred Albert Gerschwiller, 12001 W. Edgerton Ave., Hales Corners, Wis. 53130
Filed Mar. 5, 1974, Ser. No. 448,411
Int. Cl. B25b *27/00*
U.S. Cl. 81—3 R **3 Claims**



1. In a Wire Fence Connector tool, for forcing a spring-loaded hook through a hole of a fence post in order to permit locking a fence wire behind said hook, the combination of a straight pipe, one end of said pipe serving as a handle, the other end of said pipe having a nut secured thereto, said nut engaging a screw having a screw head which on its end has a depression for seating one end of a coil spring of said spring-loaded hook, and a generally C-shaped arm being welded to a longitudinal side of said pipe, said C-shaped arm being comprised of a short leg the end of which is welded at right angle to an axis of said pipe, a straight central leg at right angle to said short leg, and a terminal long leg at right angle to said central leg so that said short and long legs are parallel to each other, and an axis of said central leg being at an acute angle respective to an axis of said pipe, whereby an axis of said terminal long leg crosses to one lateral side of said pipe axis.

3,861,248
PACKING EXTRACTOR
George B. Bushinsky, 372 Masarik Ave., Stratford, Conn. 06497
Filed Nov. 12, 1973, Ser. No. 414,901
Int. Cl. B25b *27/00*
U.S. Cl. 81—8.1 **2 Claims**

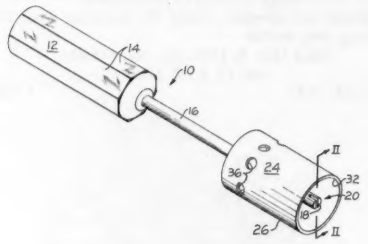
1. A tool for removing packing from a packing gland which comprises: a handle; and an elongated rod extending from said handle and terminating in a point, siad rood having a straight portion adjacent said handle, a first downward curve at the end of said straight portion, an upward second curve spaced from said first curve, a third downward curve adjacent said point, an upward fourth curve defined by said point, and an offset angle intermediate said first and third curves.

3,861,249

VALVE CORE TOOL WITH SAFETY BLEED

John F. Lindquist, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 14, 1973, Ser. No. 388,188
Int. Cl. B60c *25/18*
U.S. Cl. 81—15.4 **2 Claims**



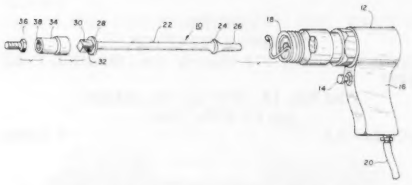
1. A valve core tool comprising an elongated shaft, a handle on one end of said shaft in the form of a generally elongated member defining a plurality of planar surfaces for the purpose of gripping, a slot for receiving a valve core in the other end of said shaft, an axial bore for receiving a valve core stem in said other end of said shaft and opening into said slot, a cup member on said shaft defining a hollow body having an open and a closed end, the interior of said body adjacent its open end being free of surface discontinuities, said cup member being fixed on said shaft such that said other end of said shaft is entirely within said cup member and adjacent to and spaced from its open end, and equally spaced ports in said hollow body adjacent said closed end for radially directing high pressure air from the interior of said body.

3,861,250

TOOL TO LOOSEN FROZEN WORK PIECES

John Zugai, 108 Craig Dr., Irwin, Pa. 15642

Filed May 9, 1973, Ser. No. 358,642
Int. Cl. B25b *19/00*
U.S. Cl. 81—52.35 **2 Claims**



1. A tool to loosen frozen work pieces having heads such as nuts, bolts and studs from their support structure comprising:

a. an unconventional socket means for engaging the head of the work piece, the inside cavity of the socket means is polygonal shaped to engage the head of the work piece, and having an effective depth less than a thickness of the head whereby when the socket means engages the head it avoids contact with the support structure retaining the work piece;

b. an extension rod affixed to the socket means; and

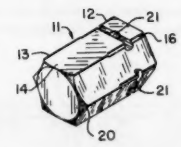
c. pneumatic gun means applying a high rate of non-rotating vibrating force uniformly to the socket means through the extension rod and along the same longitudinal axis as the socket means whereby the vibrational force is transmitted longitudinally and uniformly to the head of the work piece and vibrates it along its longitudinal axis within its support structure causing it to loosen within the support structure.

3,861,251

INTERNAL-TYPE WRENCH FOR PIPES AND THE LIKE

George W. Streander, Alamogordo, N. Mex., assignor to Designs Systems, Inc., Alamogordo, N. Mex.

Filed July 26, 1973, Ser. No. 382,753
Int. Cl. B25b *13/48*
U.S. Cl. 81—71 **19 Claims**



1. In an internal-type wrench for applying torque to a pipe section having an inner wall surface and the like, the combination comprising:

a body having three faces arranged at about 120° to each other in a generally triangular manner about a common center, each said face being provided with a bearing surface;

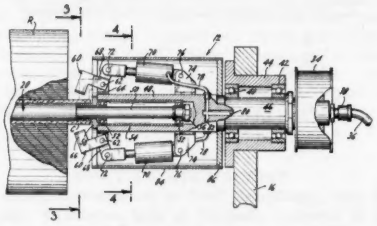
a generally circular bearing member rollable over each bearing surface into a converging socket area defined by the inner wall surface of a pipe section into which the body is inserted and an opposed bearing surface, each said bearing surface being of a corresponding shape on each side of its midpoint and arranged in relation to the inner wall surface to afford free movement of each bearing member along an associated bearing surface, radially in and out in relation to the axis of the body and rotation about the axis of the bearing member to impart both radial and tangential forces to the pipe section in either direction as a torque is applied to the body with the tangential forces applied to the pipe section increasing and the radial forces applied to the pipe section decreasing as the torque applied to the body is increased, each said bearing surface being recessed in the associated face of the body in a recess having a pair of opposed inwardly projecting bearing member retaining portions on opposite sides of an open slot through which a portion of the associated bearing member projects.

3,861,252

AIR CHUCK FOR ROLL SLITTING MACHINE

Carl A. Stoffels, Flemington, and Roger J. Lofstrom, Randolf Township, both of N.J., assignors to Judelshon Industries, Inc., Jersey City, N.J.

Filed Mar. 4, 1974, Ser. No. 448,056
Int. Cl. B23b *31/00*
U.S. Cl. 82—40 R **4 Claims**



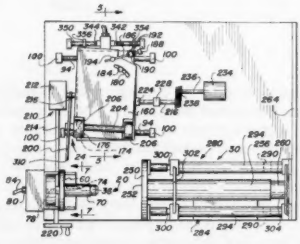
1. In a machine for slitting a roll of material wound onto a core and into cylindrical form as said roll is rotated about a stationary mandrel; the improvement comprising an improved fluid actuated chuck for gripping the core of a roll of material,

said chuck comprising a chuck body mounted in the frame of said machine coaxially with the machine mandrel including bearing means for the free rotation thereof, bearing means within said rotating chuck body attached to receive one end of the machine mandrel and to support same in a stationary non-rotating manner, chuck jaw means movably mounted on said rotating chuck body and movable from a gripping position in which said jaws are engaged with the core of a roll of material to be slit and a release position disengaged from the core, fluid powered actuation means operatively connected to said chuck jaw means to move same from the release position to the gripping position, fluid pressure means including rotatable fluid coupling means providing a connection between said rotating portion of said chuck and a source of fluid pressure and means providing a fluid passage way from said rotatable coupling member to said fluid powered actuation for moving said jaw means from the release position to the gripping position, drive means connected to said rotating chuck body of said chuck for rotating a roll of material on the machine mandrel by rotating said chuck body and said chuck jaw means when the same are engaged with the core of a roll of material mounted on the mandrel.

3,861,253
ROLL TAPE CUTTING MACHINE

Richard L. Witcraft, Chicago, and Joseph J. Palmeri, Des Plaines, both of Ill., assignors to Unipat Corporation of America II, Chicago, Ill.

Filed Dec. 26, 1973, Ser. No. 428,455
Int. Cl. B23b *37/00, 3/04*
U.S. Cl. 82—48 **9 Claims**



1. A tape slitting machine comprising, in combination, frame means,

mandrel means carried by said frame means and means rotatably supporting said mandrel means to turn a core-wound roll of tape to be cut,

roll locking means for securing the roll of tape on the mandrel means for fixed rotation therewith,

blade means including a blade for slitting the roll of tape to provide a plurality of narrower roll strips,

carriage means for supporting said blade means and for controlling the movement thereof during execution of a tape-slitting cycle thereby,

said carriage means including rail means constituting mechanical guides for controlling movement of said blade means therealong,

drive means for shifting said blade means on said rail means along a path paralleling a rotational axis of the roll of tape to bring said blade to selectable axial positions along the roll of tape, each said positions being correlated with a strip segment to be severed from the roll of tape,

drive means for moving said blade in a plane generally normal to a rotational axis of the roll of tape to cut therethrough to transform the roll of tape into a series of incremental roll strips, and

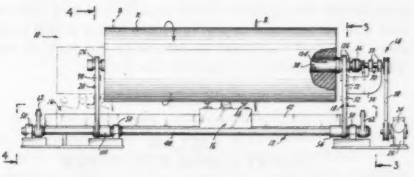
cut-trueing means for ensuring that each roll strip cut from the roll of tape has an axial width which is constant through the radial thickness of the roll strip,

said cut-trueing means constituting means for impressing an asymmetrical axial thrust force against the roll of tape simultaneously with application of radial force thereto during cutting thereof.

3,861,254
SELF-LOADING ROLL SLITTER

Carl A. Stoffels, Flemington, and Roger J. Lofstrom, Randolf Township, both of N.J., assignors to Judelshon Industries, Inc.

Filed Mar. 4, 1974, Ser. No. 448,055
Int. Cl. B23b *5/14*
U.S. Cl. 82—90 **9 Claims**

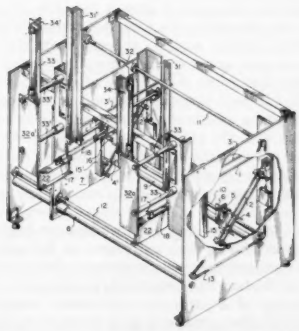


7. A machine for slitting a roll of material into narrow width rolls including means to rotate a roll about a cutting axis, a blade mounted for movement parallel to said cutting axis and in a plane perpendicular to said cutting axis for slitting movement, a removable mandrel, supporting means for said removable mandrel, mounting means mounting said supporting means for movement between said cutting axis and a loading location, means to move said mounting means to said cutting axis to carry a roll of material to said cutting axis, chuck means to engage a roll of material on said mandrel, rotational drive means operatively connected to said chuck means to drive said roll of material for rotational movement about the cutting axis and means to move said blade in said perpendicular plane as said drive means rotates said chuck means about said cutting axis.

3,861,255
DEVICE FOR CUTTING CAVITIES

Cray L. Ross, 309 Jackson Rd., Enfield, Conn. 06082

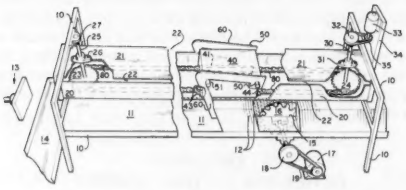
Filed Nov. 23, 1973, Ser. No. 418,764
Int. Cl. B29c *7/10;* **B26f** *3/12*
U.S. Cl. 83—1 **5 Claims**



1. A machine to cut cavities in blocks of heat severable material comprising a frame, means to convey successive blocks of material backward into the frame and forward therefrom, said means to carry said blocks carrying cam means having a front face and a rear face, rail means converging with

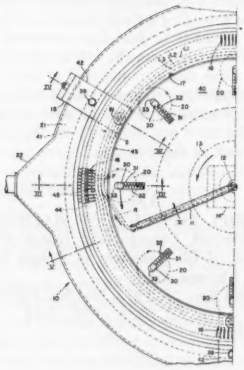
the path of said blocks into said frame toward the back of said frame, an assembly consisting of carriage means and a changeable die secured to said carriage means mounted on said rail means, said die comprising heated wires extending toward the path of said blocks of material, said assembly being provided with first and second cam engaging means, said first cam engaging means being positioned to be engaged by said front face of said cam means as the block is moved toward the back of said frame by motion of said means to convey blocks whereby said assembly will be moved along said rails in a direction converging with the movement of said block so that the said wires of said die enter said block under the influence of said front cam face, said second cam engaging means being spaced from said first cam engaging means a distance to provide lost motion as the block is moved forward in the machine prior to the engagement of the backface of said cam means with said second cam engaging means to move said assembly away from said block and to determine the path of said die wire as it is withdrawn from said block.

3,861,256
SAFETY END OF RUN FEEDER
Harold L. Mullinax, Sr., Morrow, Ga., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed June 15, 1973, Ser. No. 370,333
Int. Cl. B26d *3/14*
U.S. Cl. 83—5 **4 Claims**



1. In apparatus for advancing or moving on-edge sheets of paperboard arranged in groups in a row or column along a table and through a notching saw extending upward through the table surface, wherein the sheets are normally advanced through said saw by a reciprocating pusher device which engages one group in said row of groups, said groups being supplied to said pusher device in a continuous manner, said groups being advanced through said saw in an abutting relationship with the group being notched by said saw being advanced by the influence of said pusher device on a group following said group being notched, and wherein the groups of paperboard are restrained against vertical movement by a U-shaped channel member with a downwardly facing flat surface located at substantially the same height as the top of said sheets during their movement on the table, the improvement comprising means positioned above the line of movement of the board for selectively engaging the last board in the last group of a particular paperboard production run, and means for driving said engaging means to move said last board in said last group, together with the groups in said row downstream from said last group, from a position adjacent the feed end of said table through the notching saw to the opposite end of said table, whereby the end of a run of a particular board will be moved through the notching saw in a smooth, continuous manner.

3,861,257
PRECISION CUTTER
William F. Laird, Kingston, Ontario, Canada; David I. Walsh, Barrington, and George E. Corneau, Central Falls, all of R.I., assignors to Hartford Fibres Ltd., Kingston, Ontario, Canada
Filed Nov. 8, 1973, Ser. No. 413,902
Int. Cl. D01g *1/04*
U.S. Cl. 83—22 **30 Claims**

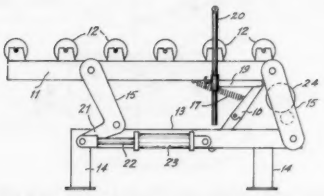


1. In a precision cutter for cutting rope into a plurality of cut fibres of predetermined short length, the combination which comprises: support means maintaining a plurality of at least about 50 spaced-apart substantially parallel cutting blades in a substantially closed configuration, said blades having cutting edges which face inwardly within said configuration and are spaced about one-eighth to one sixty-fourth inch apart from each other, feed means feeding said rope within said configuration and including distributing means operative within said configuration to distribute a layer of said rope around in successive contact with said successive cutting edges, pressure means comprising a plurality of spaced-apart pressure members movable relative to said rope within said configuration and operative and effective upon said rope while said rope is disposed in simultaneous contact with a plurality of said successive edges, to press said rope outwardly against said successive cutting edges while said rope is in contact with a plurality of said successive edges to cut said rope by radially-directed pressure in contact with said cutting edges.

3,861,258
RECEIVING TABLE FOR A GUILLOTINE
William Taylor Irvine, 51 The Esplanade, South Perth, Australia
Filed July 25, 1973, Ser. No. 382,540
Claims priority, application Australia, Aug. 10, 1972, 29/72
Int. Cl. B26d *7/06*
U.S. Cl. 83—81 **4 Claims**

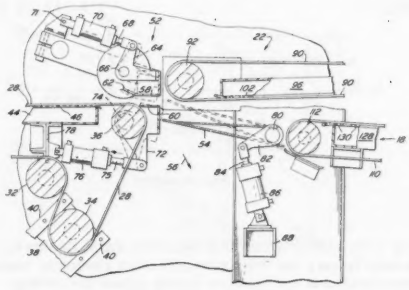
1. A receiving table for a guillotine comprising a workpiece supporting platform, a frame, a pluraltiy of links pivotally connected to said platform and said frame and arranged so that when loaded, said platform will move downwardly to a position inclined towards the rear thereof, means for locking said platform in a subsantially horizontal position, said locking means comprising a pair of articulated locking links pivotally connected to said supporting platform and said frame, a coil spring connected to said locking links and capable of normally

holding said locking links in their locked position and an actuating means capable of moving said locking links from



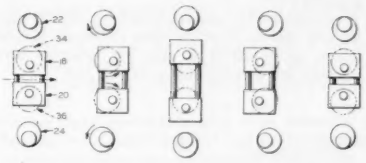
their locked position and positioned for being actuated by the motion of the quillotine blade.

3,861,259
SHEET DELIVERY SYSTEM
Thomas R. Hitch, Aldan, Pa., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed June 4, 1973, Ser. No. 367,034
Int. Cl. B65h *29/62*
U.S. Cl. 83—106 **10 Claims**



1. A sheet delivery system comprising means for cutting a web into sheets, a first conveyor for removing the cut sheets at a speed so that a gap develops between adjacent sheets thereon, second and third conveyors for transferring sheets from said first conveyor to one of a pair of take-off conveyors, a movable selectively operable diverter, said diverter being between the exit end of said first conveyor and the inlet end of said second and third conveyors, said diverter having one position wherein sheets are transferred from said first conveyor to a lower surface on said second conveyor and another position wherein sheets are transferred to the upper surface of said third conveyor, vacuum means associated with each of said conveyors, each of said conveyors including an endless perforated conveyor belt, the vacuum means associated with said second conveyor being arranged to retain sheets on the lower run of its belt, the vacuum means associated with said first and third conveyors being arranged to retain sheets on the upper run of their belts, and means associated with each vacuum means for creating a negative pressure through said belts.

3,861,260
DOUBLE BUCKET DIE CUTTING ASSEMBLY
Martin Kesten, West Hartford, and Richard L. Edwards, Windsor Locks, both of Conn., assignors to Preston Engravers, Inc., Windsor, Conn.
Filed Nov. 16, 1973, Ser. No. 416,663
Int. Cl. B26d *1/56*
U.S. Cl. 83—328 **8 Claims**



1. A double bucket die cutting assembly, operable to perform a work operation on a length of material, comprising:

a. frame means including a pair of frame members;

b. bucket means mounted on said pair of frame members including first and second buckets having cooperating work performing means supported thereon, said bucket means also including first and second support means rotatably mounted on said frame and having the ends of said buckets eccentrically supported thereon for movement of said buckets to and from a closely spaced work performing position in which said work performing means cooperate to perform a work operation on a length of material passing therebetween, said work performing position of said buckets defining a work station;

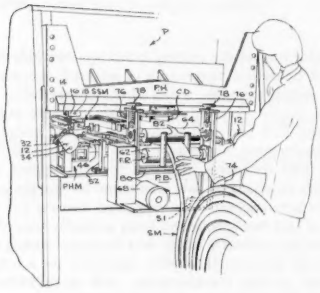
c. counterbalancing means movably mounted on said pair of frame members operable to counterbalance the weight of said first and second buckets, said counterbalancing means including first and second rollers extending transversely between said frame members in spaced relation to said first and second buckets and on opposite sides of the plane defining said work station, and support means rotatably mounting said rollers on said frame for rotation about an axis substantially in the same plane as the axes of rotation of said buckets, said rollers having the weight thereof unequally distributed about their axes of rotation; and

d. drive means supported on said pair of frame members and operatively connected to said bucket means and said counterbalancing means for driving said first and second buckets to and from said work performing position and for moving said counterbalancing means in a predetermined manner to relative to said first and second buckets to cause said counterbalancing means to produce a firce effective to counterbalance the force produced by the weight of said first and second buckets during the movement thereof to and from said work performing position.

3,861,261
APPARATUS FOR POSITIONING, HOLDING AND DIE-CUTTING RESILIENT AND SEMI-RESILIENT STRIP MATERIAL
W. Clarence Maxey, Bedford, Va., assignor to Rubatex Corporation, Bedford, Va.
Filed Nov. 9, 1973, Ser. No. 414,338
Int. Cl. B26d *7/02, 7/16*
U.S. Cl. 83—387 **25 Claims**

1. A positioning and holding mechanism for accurately positioning and holding lengths of rubber, plastic and other resilient material of strip form during die-cutting in conjunction with a press having a reciprocable die-carrying press head movable toward and away from a press- or die-bed upon which said strip material is supported during the cutting thereof, said mechanism comprising in combination:

a. a pair of rotary cam-operated, laterally reciprocable positioning-and-holding bar assemblies mountable on said press bed at opposite sides of a central feed path for said strip material each of said bar assemblies including:
1. an elongated rigid bar structure having a gripping edge disposable parallel to the strip material to be fed in a fore-and-aft direction through the press.
2. rod means on said bar structure and extending transversely away from the gripping edge, and having cam follower means at an end oppositely remote from said gripping edge.
3. press-supportable bracket means for slidably supporting said rigid bar structure via its rod means to facilitate lateral reciprocation of said bar structure between gripping and non-gripping positions; and



4. resilient means operatively interposed between said bracket means and rigid bar structure to normally bias said bar structure to a neutral non-gripping position away from the strip of material to be gripped and die-cut, and to constantly urge said cam follower means of said bar structure's rod means into engagement with said rotary cams; and

b. a pair of motivation linkage assemblies mountable at lateral opposite sides of a cutting die and so as to depend from beneath said press head, and operatively connected via said rotary cams with said positioning-and-holding bar assemblies, said linkage assemblies being operative responsive to down and up cycling of said press head to effect said reciprocable movement of said bar assemblies to properly position and hold said strip from opposite longitudinal sides thereof during cutting.

3,861,262

MANUALLY OPERATED CUT-OFF TOOL

Louis M. Carpenter, and Kenneth L. Dunn, both of Fayetteville, N.Y., assignors to Carpenter Manufacturing Co., Inc., Manlius, N.Y.

Filed Aug. 23, 1973, Ser. No. 390,903

Int. Cl. B23d *17/00*; B26d *1/30*

U.S. Cl. 83—642 **11 Claims**

1. A manually operated cutting tool comprising, in combination:

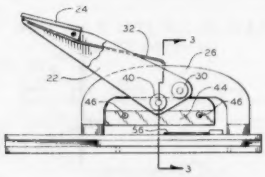
a. a stationary base having substantially planar upper surface for supporting a workpiece;

b. a fixed support having a portion positioned in spaced relation to said upper surface;

c. a handle selectively rotatable about a fixed axis through said portion of said support;

d. a knife blade having a cutting edge disposed for movement into and away from contact with said upper surface; and

e. means supporting said knife blade for free rotation about a second axis through said handle parallel to said fixed axis and spaced therefrom by a distance such that rotation of said handle about said fixed axis in a first direction



moves said cutting edge in an arcuate path into contact with said upper surface.

3,861,263

VARIABLE TIME CONSTANT CIRCUIT FOR USE IN AN ELECTRONIC MUSICAL INSTRUMENT

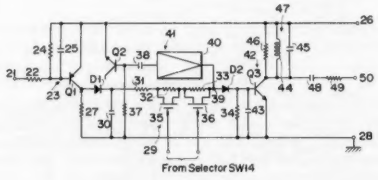
Mitsuo Okudaira, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed June 21, 1973, Ser. No. 371,997

Claims priority, application Japan, June 21, 1972, 47-62050; June 21, 1972, 47-62051; June 21, 1972, 47-62052; June 21, 1972, 47-62053

Int. Cl. G10h *3/00*

U.S. Cl. 84—1.11 **9 Claims**



1. A variable time constant circuit for use in rhythm sound sources to vary the rhythm sounds in an electronic musical instrument, and operative on rhythm pulses, comprising:

a pulse source providing rhythm pulses and control pulses in synchronism with the musical sounds of said instrument; and

means for converting said rhythm pulses into rhythm sound signals, including:

at least two different time constant determining circuit elements coupled to each other and coupled in the signal path of said converting means;

one of said time constant determining circuit elements being split into at least two units which are electrically coupled to each other; and

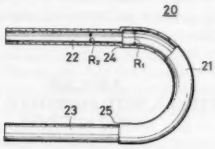
at least one switching element having: a controllable main current conduction path included in one of said split time constant determining circuit element units and being controlled to selectively vary the impedance of said one of said split time constant determining circuit element units to vary the overall time constant of said time constant circuit; and a control electrode coupled to and controlling the impedance of said main current conduction path, said control electrode being impressed with said control pulses produced in synchronism with the musical sounds to vary the conduction path of said at least one switching element, thereby varying said overall time constant and varying said rhythm sounds.

3,861,264

TUNING SLIDE FOR BRASS MUSICAL INSTRUMENTS

Takeshi Matsumoto; Satahei Suzuki, and Minoru Inoue, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Oct. 24, 1973, Ser. No. 409,237
Int. Cl. G10d 7/10
U.S. Cl. 84—387 8 Claims



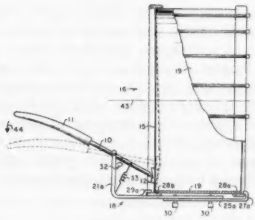
1. A tuning slide for brass musical instruments comprising a U-shaped hollow tube structure having a bight section and a pair of parallel straight sections each continuous to each end of said bight sections, said bight section being made integral as one piece with each of said straight sections, and the inner diameter of said bight section being greater than the inner diameter of each of said straight sections.

3,861,265

DRUM PITCH ADJUSTMENT DEVICE

Jack A. Van der Wyk, 6857 Armour Dr., Oakland, Calif. 94611

Filed Dec. 17, 1973, Ser. No. 425,687
Int. Cl. G10d 13/02
U.S. Cl. 84—411 6 Claims



1. A drum and pitch adjustment device for a drum comprising

means for applying a pressure at a particular location on the surface of a sound producing membrane of a drum, and means for changing the location of said pressure while said pressure is being applied to said membrane.

3,861,266

MUSICAL TUNING INSTRUMENT UTILIZING DIGITAL TECHNIQUES

Ranald Otis Whitaker, 4719 Squire Dr., Indianapolis, Ind. 46241

Filed May 29, 1973, Ser. No. 364,678
Int. Cl. G10g 7/02
U.S. Cl. 84—454 3 Claims

1. A musical tuning instrument comprising:

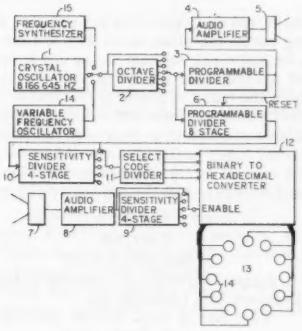
a reference signal source generating a reference signal of reference frequency;

an octave divider comprising cascaded binary divider stages for receiving said reference signal and producing at the output of each successive stage a signal whose frequency is half the frequency of the input of said stage and means for selecting the output of a particular stage;

a primary programmable divider consisting of cascaded binary divider stages for receiving said selected output from said octave divider and adapted for being programmed in twelve modes each successive mode producing as a final output of said primary programmable divider a signal whose frequency is that of a successive musical note of the particular octave corresponding to said selected output of said octave divider;

a secondary programmable divider accepting as input the output of said octave divider and similar to said primary programmable divider but consisting of four fewer stages and adapted to produce at its output a signal whose frequency is approximately 16 times the frequency of said final output of said primary programmable divider, said secondary programmable divider being adapted for being reset by said final output of said primary programmable divider;

an audio input section consisting of an acoustical pickup feeding to an audio amplifier and producing a digitally compatible output in response to an audio input;



an audio input sensitivity divider consisting of cascaded binary stages the output of each stage being a signal whose frequency is half the frequency of the input to said stage and accepting as input the output of said audio input section;

a reference sensitivity divider consisting of the same number of cascaded binary stages as said audio input sensitivity divider, the output of each stage being a signal whose frequency is half the frequency of the input to said stage and accepting as its input the output of said secondary programmable divider;

means for selecting the output of one of the stages of said audio input sensitivity divider and simultaneously selecting the output of the corresponding stage of said reference sensitivity divider;

a display consisting of sixteen light emitting diodes; and

a drive circuitry having a first input and a second input and adapted to cause each diode in succession to be activated in response to successive highs of said second input if and only if said first input is high simultaneously, said first input being the selected output of said audio input sensitivity divider, and said second input being the selected output of said refrence sensitivity divider.

3,861,267

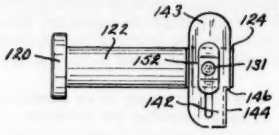
KEY BOLT

Frank C. Collister, 3641 North Dorko Dr., Port Clinton, Ohio 43452

Division of Ser. No. 872,658, Oct. 30, 1969, Pat. No. 3,673,910. This application Dec. 27, 1971, Ser. No. 212,729
Int. Cl. F16b 21/00
U.S. Cl. 85—3 R 3 Claims

1. A key bolt including a shank having a key-receiving shelf-type recess formed at one end thereof, an elongated

planar key slidably disposed on said recess and having end portions and spaced side walls forming a closed elongated key slot intermediate the ends of the key; and a pin transversely disposed in the shank at said one end thereof and passing through said recess and said key slot at substantially right angles thereto to slidably retain the key within the recess, said key being slidable on said recess to an unlocked position wherein the key extends directly outwardly of the shank and forms an extension thereof and being slidable to a locked position wherein the key is substantially perpendicular to the

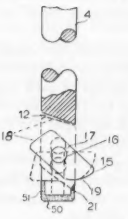


shank, one of said side walls of the key including an abutment protruding out of the plane of the key to form a key lock abutting the bolt shank adjacent its one end to retain the key in locked position, said key being yieldable to a position spaced from the recess to enable the abutment to be moved from locked position to unlocked position, said one side wall having at least a portion of its outer edge formed into a downwardly turned flange having its inner end forming said abutment, and resilient means disposed between the free end of the pin and the key to bias the key against the recess.

3,861,268
BLIND HOLE BOLT

Edward C. Jaggers, Louisville, Ky., assignor to Jaggers Equipment Company Inc., Louisville, Ky.

Filed June 6, 1972, Ser. No. 260,329
Int. Cl. F16b *21/00*
U.S. Cl. 85—3 R **3 Claims**



1. A blind hole bolt comprising in combination, an elongated shaft, threads at one end of said shaft, a diametrically disposed slot extending axially from the other end of said shaft along a portion of said shaft, a solid locking blade, pivotable means for mounting said locking blade in said slot for movement between a first position in which said blade is contained within said slot and is axially aligned with said shaft and a second position in which said blade extends outside of said shaft and is generally transversely aligned relative to said shaft;

A. the improvement in said pivotable means comprising:

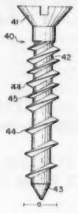
1. a guide channel generally semi-circular in cross section and axially aligned with said shaft in said slot;
2. a hemispherical guide and pivot means projecting from the side of said locking blade, said hemispherical guide and pivot means being complementary to said channel in cross section for slidably fitting in said guide channel and for moving axially in said channel as said blade pivotably moves from one position to another; and,

B. the further combination therewith of a locking blade stop comprising a strength closure of said slot at the end of said shaft, said locking blade stop comprising an integral mass of metal fused to the sides and across the bottom of said slot and tapered at one end, at the top to complement the surfae of said locking blade, and serving as a means for limiting the axial movement of said locking blade within said slot and as an abutment means of high tensile strength for said locking blade when said locking blade is in locking position in transverse alignment at the end of said shaft.

3,861,269
FASTENER WITH IMPROVED THREAD CONSTRUCTION

Richard C. Laverty, West Chester, Pa., assignor to Superior Dry Wall Screw Mfg., Co., Inc., Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 103,637, Jan. 4, 1971, Pat. No. 3,703,843. This application Nov. 13, 1972, Ser. No. 306,101The portion of the term of this patent subsequent to Dec. 28, 1989, has been disclaimed.
Int. Cl. F16b *25/00, 39/30*
U.S. Cl. 85—46 **17 Claims**



1. A fastening element including a shank, a head axially of one end of said shank, and a tapered point axially of the opposite end of said shank, said shank being divided into a first portion located adjacent said point and a second portion located adjacent said head; a continuous thread of uniform pitch on said shank extending substantially over the entire length of said shank with at least one of said portions having a plurality of thread convolutions; and at least one additional parallel thread of similar uniform pitch intermediate said continuous thread only on said second portion of said shank.

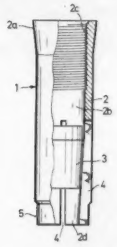
3,861,270
STRADDLING DOWEL

Urs Ernst, Vaduz, and Beda Meier, Schaanwald, both of Liechtenstein, assignors to Palar (Curacao) N.V., Netherlands Antilles

Filed Sept. 28, 1972, Ser. No. 293,064
Claims priority, application Germany, Oct. 22, 1971, 2152729
Int. Cl. F16b *13/06*
U.S. Cl. 85—84 **4 Claims**

1. A straddling dowel comprising a metallic sleeve having a leading end, which is inserted first into a borehole formed to receive the dowel, and a trailing end and forming a continuous bore extending between the leading and trailing ends, said sleeve having a spreading range extending rearwardly from ito leading end so that said sleeve can be spread radially outwardly and anchored to the surface of the borehole, said sleeve having a spreading range extending rearwardly from its tion of its length from the leading end and the axial length of said slots approximately determining the axial length of the spreading range of said metallic sleeve, and a spreader insertable into the continuous bore from the trailing end and displaceable within the bore toward the leading end for effecting the spreading action, wherein the improvement comprises that the surface of the continuous bore is tapered in a frusto-

conical shape for an axially extending portion thereof from the leading end with said tapered surface diverging in the direction of the trailing end and terminating adjacent to and spaced forwardly of the trailing ends of said slots, the outer surface of said sleeve in its spreading range from the leading end presenting a smooth rounded surface in the circumferential direction, said spreader having a frusto-conically shaped, axially extending portion extending rearwardly from its end which is located closer to the leading end of the bore and which effects the spreading action within the spreading range of said sleeve, the frusto-conically shaped portion of said spreader corresponding to the frusto-conically shaped tapered portion of said bore at the trailing end thereof so that the frusto-conically shaped portion of said spreader seats in closely fitting surface contact with the correspondingly shaped surface of said bore before it is driven forwardly through the tapered surface of said bore, the axial length of the frusto-conically shaped portion of said spreader being a fractional part of the axial length of said tapered surface at the leading end of the said bore so that prior to driving said spreader forwardly toward the leading end for effecting the spreading action, its end closer to the leading end



to the bore is spaced rearwardly from the leading end, the outer surface of said sleeve for an intermediate portion thereof spaced from its leading and trailing ends and extending into the spreading range has a cylindrically shaped surface, the forward end of the outer surface of said sleeve between the leading end and the cylindrically shaped surface of said intermediate portion being spaced radially inwardly from a projection of the cylindrically shaped surface and having a minimum diameter such that the leading end is not widened to more than the diameter of the bore hole upon completion of the spreading action, and the axial length of the forward end of the outer surface being not greater than the axial distance which the end of said spreader located closer to the leading end of said sleeve is spaced rearwardly from the leading end when it is in position in contact with the tapered surface therein and before it is driven forwardly toward the leading end, and the plane of the surface of the forward end of said sleeve spaced radially inwardly of the projection of the cylindrically shaped portion is, at its junction with the cylindrically shaped portion, disposed angularly relative to the cylindrically shaped portion.

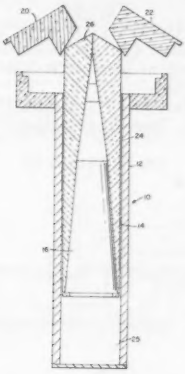
3,861,271

SILO CLOSURE ACTUATION

Garland W. Osborn, jr., Fountain Valley, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 20, 1973, Ser. No. 372,882
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.8 **2 Claims**

1. In a silo enclosing a missile, said silo having massive segmented closure members provided with underside surfaces tapered upwardly to the point of juncture of said closure members, means for rapidly opening said closure members comprising: foam means carried around said missile and extending upwardly between the nose of the missile and said closure members, said foam means having upper surfaces tapered in parallel relation to said tapered surfaces of said closure members and disposed in spaced relation with said closure members; and, means for propelling said missile up-



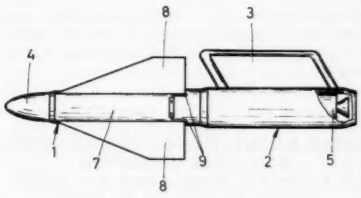
wardly whereby said tapered surfaces of said foam material engages said tapered surfaces of said closure members for displacement thereof.

3,861,272

AMMUNITION COMPRISING A LAUNCHER TUBE AND A REACTION-DRIVEN MISSILE

Voler Koepfer, Hofolding, Germany, assignor to Bayern-Chemie Gesellschaft Fur flugchemische Antriebe Mit beschrankter Haftung, Aschau, Germany

Filed Dec. 13, 1972, Ser. No. 314,516
Claims priority, application Germany, Jan. 28, 1972, 2204007
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.816 **3 Claims**



1. Ammunition for carriers, such as air planes, comprising a launching tube adapted to be supported on the carrier and having a launching end with an opening through which a missile is launched, a guide fin carrying tube section engaged with said launching tube and extending outwardly from said launching end, a missile having a rear thrust engine drive portion located within said launching tube and extending through said guide fin carrying tube section and terminating in a tip projecting outwardly from said section, means defining a closed space between said missile and said launching tube surrounding said drive engine for insulating said drive engine during carrying flight, means on said missile for lockably engaging said guide fin-carrying tube section as said missile is launched from said launching tube for combined flight of said guide fin-carrying tube section with said missile, said launching tube and said guide fin-carrying tube are telescopically engageable, a releasable plate mounted on said launching tube for temporarily locking said guide fin carrying tube section to said launching tube against axial movement in respect thereto, and projecting engagement means defined between said

launching tube and said guide fin carrying tube section for preventing relative rotation therebetween.

3,861,273

SELF-LOADING PISTOL WITH A STOCK

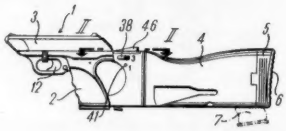
Alex Seidel, Oberndorf A.N., and Helmut Weldle, Beffendorf, both of Germany, assignors to Heckler & Koch GmbH, Oberndorf, Germany

Filed June 25, 1973, Ser. No. 373,320

Claims priority, application Germany, June 23, 1972, 2230690

Int. Cl. F41d *11/02*

U.S. Cl. 89—129 B **8 Claims**



1. Self-loading pistol with a trigger mechanism which may be changed over to continuous fire and with a stock to which the pistol is detachably connected by the rear side of the grip and in which is located a control member serving for changing the trigger mechanism over to continuous fire and actuated by means of a change-over switch, wherein a rounds counter is provided in the stock, which rounds counter comprises a control lever projecting from the upper side of the stock and located in the path of the breech mechanism of the pistol when it is recoiling at the time of firing and a toothed part controlled by the control lever, which part is held in its respective position by a spring-loaded lock pawl and the toothed part of which returns the control member to the individual firing position on reaching an end position, so that the firing sequence is interrupted, the trigger mechanism of the pistol being provided with a member engaging in the stock, which member, so long as the trigger of the pistol is pulled, keeps a control member, which in its inoperative position keeps the lock pawl out of engagement with the toothed part, in an operative position in which the lock pawl is free to engage the toothed part.

3,861,274

ADJUSTABLE HESITATION BLOW BACK OPERATED GUN LEVER MECHANISM

Walter E. Perrine, P.O. Box 66, Navajo, Ariz. 86509

Filed Feb. 22, 1973, Ser. No. 334,721

Int. Cl. F41d *11/06*

U.S. Cl. 89—180 **3 Claims**

1. A bolt action weapon comprising:

a frame,

a handle on said frame,

a hollow barrel having a firing chamber,

a bolt movable in said frame axially to and from the firing chamber of said barrel,

a link connected at one end to said bolt,

a compression element provided within said handle and interconnected between said frame and the other end of said link to normally yieldingly urge said link to upward bolt locked position,

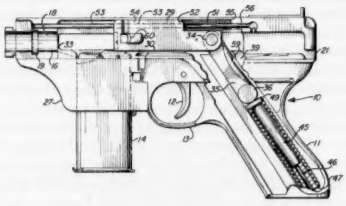
and guiding means for directing said other end of said link into said handle during a firing of said weapon,

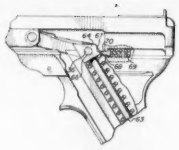
said other end of said link comprising an arcuate surface,

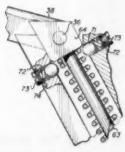
said guiding means comprising an arcuate surface for engaging said arcuate surface of said other end of said link only when said bolt is in the firing chamber of said bore,

one of the arcuate surfaces of said link and said guiding means being rotatably mounted,

said other end of said link comprises a roller for moving over said arcuate surface of said guiding means during the initial movement only of the link into the handle of the weapon.







3,861,275

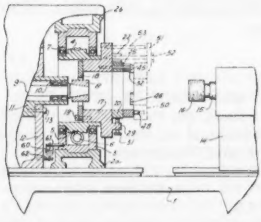
DUPLICATING DEVICE FOR GRINDING OR MILLING MACHINES

Josef Mueller, Stuttgart-Fasenenhof, Germany, assignor to Fortuna-Werke Maschinenfabrik AG, Stuttgart, Germany

Filed Sept. 13, 1973, Ser. No. 397,097

Int. Cl. B23b *1/18;* **B24b** *17/00*

U.S. Cl. 90—13.4 **10 Claims**



1. In a duplicating device for machines with a rotary material removing tool, a combination comprising support means; a copying roller rotatably mounted on said support means about a predetermined axis; a workpiece holder means for carrying a workpiece; a template having a contour to which a

workpiece carried by said workpiece holder means is to be machined; means mounting said workpiece holder means on said support means turnable about an axis parallel to said predetermined axis and movable transverse thereto for holding said copying roller in engagement with said contour; means for rotating said workpiece holder means about its axis; means on said workpiece holder means for finely adjusting the position of a workpiece carried by said workpiece holder means and the position of said template relative to each other; and tool means including a rotary tool spindle, a material removing tool fixed to said spindle for rotation therewith, and a tool slide mounted on said support means movable in axial direction of said tool spindle toward and away from said workpiece holder means.

3,861,276

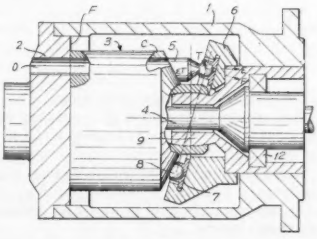
HYDRAULIC ROTARY BARREL PUMPS OR MOTORS

Rene Lucien, Neuilly sur Seine, Hauts de Seine, France, assignor to Societe Anonyme dite: Messier, Paris, France

Continuation of Ser. No. 18,593, March 3, 1970, abandoned, which is a continuation-in-part of Ser. No. 598,410, Dec. 1, 1966, Pat. No. 3,545,338. This application July 20, 1973, Ser. No. 380,949

Int. Cl. F01b *13/04*

U.S. Cl. 91—499 **5 Claims**



1. A hydraulic pump or motor of the rotating and floating barrel type, comprising a cylindrical fixed casing provided with a bottom having a slide-face with first and second orifices therein; a barrel supported in said casing for rotation about an axis; said barrel having cylinders and slidable pistons in said cylinders; means for placing said cylinders into communication alternately with said first and second orifices in said slide-face; means including an inclined plate for reciprocally moving said pistons in said cylinders and producing forces on said pistons having components acting as shear forces applied to said barrel; a rotatable shaft having opposite ends; connecting means between said barrel and one of said ends of the shaft for transmitting rotational drive therebetween; a support interposed between between said barrel and said shaft and in coaxially spaced relation with said shaft to provide a clearance therewith; means rigidly securing said support to said casing; a first bearing between said support and the other end of said shaft rotatably supporting said shaft in the support, said shaft extending in cantilever fashion from said first bearing; and a second bearing within the barrel between said support and said barrel, said second bearing being of small diameter and disposed at the point of application on the axis of said barrel of the resultant of the shear forces applied to said pistons to resist said shear forces and transmit the same to said support and prevent application of load to said shaft, said second bearing being constructed to permit said barrel to make slight angular movements with respect to said support and thereby with respect to said axis of rotation of the shaft, said first bearing being axially displaced with respect to the second bearing on the side remote relative to the slide face, said shaft being freely rotatable and unsupported from the first bearing to the connection means, said connecting means being constructed to provide radial play of the shaft to accommodate said angular movements of the barrel.

3,861,277

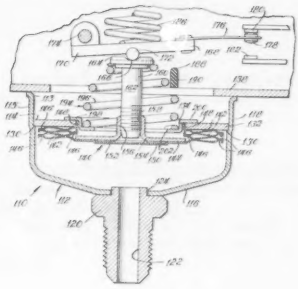
PRESSURE RESPONSIVE DEVICE HAVING STACKED DIAPHRAGM ASSEMBLY

Leland Burns Wagner, and Russell Cripe, both of Goshen, Ind., assignors to Penn Controls Inc., Oak Brook, Ill.

Continuation of Ser. No. 175,071, Aug. 26, 1971, abandoned. This application May 31, 1973, Ser. No. 365,601

Int. Cl. F01b *19/00;* **F16j** *3/00*

U.S. Cl. 92—34 **5 Claims**



1. A pressure responsive device comprising an open-ended housing having a wall member with a central opening defining its open end, a stacked diaphragm assembly supported inwardly in said housing providing a movable wall closing said central opening and defining with the interior walls of said housing an expandable chamber therein, said diaphragm assembly including a series of springy, curved, corrugated diaphragms interconnected together in accordian bellow-like arrangement, each of said diaphragms extending radially away from said central opening and terminating a short distance from said interior walls of said housing, wherein one end of said series is secured about the margin of said central opening of said wall meber and the other end of said series terminates in a springy, curved, corrugated diaphragm having a closed wall underlying said central opening, inlet means for introducing a fluid into said expandable chamber, a push-rod coupled to said closed wall member and extending outwardly of said housing for actuating a controlled device in response to variations in pressure within said housing and wherein adjacent diaphragms of said series of curved diaphragms abut and become based against each other and the outermost diaphragm abuts and becomes based against said wall member of said housing under conditions of overpressure within said chamber to transmit further pressures to the walls of said housing and thereby significantly restrict the application of further forces to said push rod with the application of further pressure to said bellows to thereby provide an automatic high pressure stop for said pressure responsive device.

3,861,278

PISTON FOR HYDROSTATIC MACHINES

Franz Forster, Haibach, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Apr. 2, 1973, Ser. No. 347,352

Claims priority, application Germany, July 28, 1972, 2237240

Int. Cl. F01b *31/10;* **F16j** *1/00*

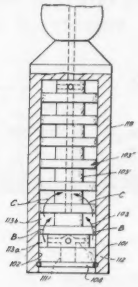
U.S. Cl. 92—57 **2 Claims**

1. A piston for an axial-piston hydrostatic machine wherein said piston at one end reacts against a surface and defines a pressure cushion therewith while the other end of the piston is receivable in a cylinder, said piston comprising an elongated

body formed with a passage extending between said ends and delivering fluid under pressure to said cushion;

a contaminant-removing filter in said body along said passage, said body being formed with an elongated cavity between said ends;

a plug of a material having a lower specific gravity than that of said body received in said cavity and at least partially forming said passage, said plug being formed with an inlet opening at said other end, said plug defining within said cavity an axially extending annular chamber communicating with said inlet, said filter being formed as a sleeve surrounding said plug and partitioning said chamber into two compartments communicating through said sleeve, said plug being formed at an end thereof proximal to said cushion with an outlet communicating with said chamber and feeding fluid therefrom to said cushion, said fluid within said chamber passing between said compartment from said inlet to said outlet through said sleeve.



3,861,279

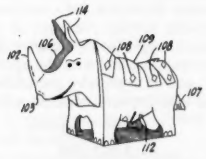
PAPER BAG SCULPTURES AND METHOD FOR FORMING THE SAME

John E. Maling, 470 Cotton St., Menlo Park, Calif. 94025

Filed Feb. 22, 1973, Ser. No. 334,697

Int. Cl. B31d *5/04*

U.S. Cl. 93—1 R **15 Claims**



1. A paper sculpture comprising; a body formed from at least one paper bag; flaps formed as an integral portion of said bag for folding and attaching to said body; additional flaps formed on said bag for folding away from said body for forming appendages to said body; and means for attaching to said body representing predetermined recognizable features of a predetermined subject; whereby a three dimensional figure representative of said predetermined subject is formed.

3,861,280

PORTABLE TAGGING MACHINE

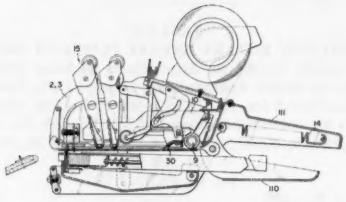
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo-to, Japan

Filed Aug. 8, 1973, Ser. No. 386,745

Claims priority, application Japan, Sept. 28, 1972, 47-96608

Int. Cl. B25c *5/00*

U.S. Cl. 93—88 **3 Claims**



1. A portable tagging machine comprising:

a casing having side plates unified by connecting means and having a holder for revolvably holding a roll of continuous strip of tags which are separable from each other; lever means mounted within said casing so as to be turnable between a first and a second position, said lever means being normally held in said first position by restoring spring means;

Supply means for supplying said continuous strip of tags onto a passageway extending through said casing;

feed means for feeding said continuous strip of tags along said passageway by indexed movement in step with the motion of said lever means between said first and said second position;

printing means for printing a desired inscription on the foremost tag of said continuous strip of tags, said printing means being supported by said lever means for simultaneous turning motion therewith and being actuated to print the desired inscription on the foremost tag when said lever means is turned to said second position;

cutting means for separating the printed foremost tag from the rest of said continuous strip of tags, said cutting means being also supported by said lever means for simultaneous turning motion therewith and being actuated to separate the printed foremost tag when said lever means is turned to said second position; and

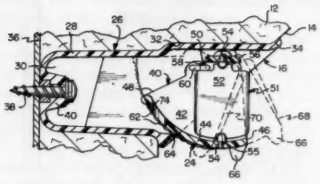
stapling means for stapling the printed and separated tag to an article inserted into a slot formed in said casing; said feed means comprising a pair of feed pawls capable to reciprocating along said passageway while engaging said continuous strip of tags during forward travel thereof and disengaging the same during backward travel, and cam means adapted to translate the turning motion of said lever means into the reciprocating forward-and-backward motion of said feed pawls;

said lever means comprising a lever pivotally attached to a shaft and extending rearward, a hand lever formed by said extended part of said lever, and a grip fixed to the side plates of the casing, said hand lever being turned around said shaft when said grip and hand lever are gripped, thereby to cause operations of the printing means and supply means.

3,861,281
ADJUSTABLE GRILLE

Hartsel L. Godwin, Arlington, Tex., assignor to Volkswagen Products Corporation, Fort Worth, Tex.

Filed Jan. 22, 1973, Ser. No. 325,574
Int. Cl. B60h 1/24
U.S. Cl. 98—2 3 Claims



1. An adjustable grille assembly comprising:

a housing having an upper, a lower, and side walls, the forward end of the upper wall extending beyond the forward end of the lower wall, thereby defining a housing mouth which recedes in a downward direction;

a grille frame defining a fluid flow passage pivotally mounted within the mouth of said housing about a horizontal axis, said axis passing through an upper portion of said frame and an upper portion of said housing, said grille frame including a convex bottom wall in substantially continuous sliding contact with the forward end of the lower housing wall, a pair of side walls, a top wall, and a plurality of vanes, each vane being pivotally mounted between the top and bottom frame walls, said convex bottom wall having a leading edge and a trailing edge and slot means formed therethrough adjacent said trailing edge for diffusing the fluid passing into said grille frame in a downward direction when the grille frame is directing the bulk of the fluid through said vanes in an upward direction; and

detent means formed on the lower surface of said convex bottom wall adapted to cooperate with said forward end of the housing lower wall to selectively fix said grille frame in a particular position;

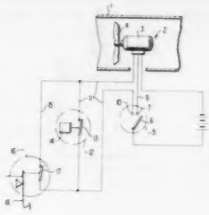
wherein the grille frame is adapted to be retractable from a first position in which the frame extends substantially outside of said housing to a second position in which the frame is substantially within the housing.

3,861,282
HEATING AND VENTILATING INSTALLATION FOR A MOTOR VEHICLE

Hans O. Scherenberg, Stuttgart, and Rudolf Andres, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Apr. 10, 1974, Ser. No. 459,798
Claims priority, application Germany, Apr. 11, 1973, 2318175
Int. Cl. B60l
U.S. Cl. 98—14 16 Claims

1. A heating and ventilating installation for a motor vehicle which comprises a blower means including an electric motor and a fan wheel, a manually actuatable switch means for selectively turning on and off the blower means, characterized by an additional switch means in series with the manually actuatable switch means, said additional switch means being operable to turn off the engaged blower means at low driving velocities or during standstill of the motor vehicle and being

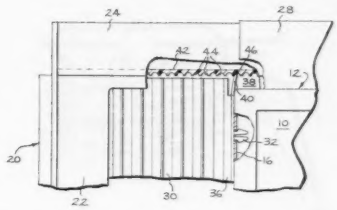


operable to turn on again the blower means with increasing velocity or upon overcoming the standstill.

3,861,283
ROOM AIR CONDITIONER MOUNTING ARRANGEMENT

Richard L. Shaner, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Feb. 7, 1974, Ser. No. 440,528
Int. Cl. E06b 9/06; F24f 5/00
U.S. Cl. 98—94 2 Claims



1. In an adjustable air conditioner window mount of the type having a C-shaped frame with parallel leg members straddling the air conditioner in sliding relationship, and an extensible curtain fixed within the C-shaped frame and tending to exert a restoring force as the frame is extended outwardly from the air conditioner, the improvement comprising:

a notched surface on at least one of said leg members facing the air conditioner; and

a resilient tab fixed adjacent the air conditioner and extending into engagement with the notched surface thereby resisting the restoring force and retaining the frame in a selected extended position relative to said air conditioner.

3,861,284
CUP LIDS FOR USE WITH TEABAGS AND THE LIKE

Albert D. Costello, 303 E. Eagles St., East Boston, Mass. 02128

Filed July 9, 1973, Ser. No. 377,259
Int. Cl. A47j 31/00
U.S. Cl. 99—321 10 Claims

1. An attachment for use with a cup adapted to contain water and a stringed teabag or the like, comprising

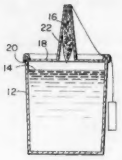
a. a pre-shaped funnel,

b. said funnel including resilient coextensive opposing side walls joined in closely spaced relation along opposing side edges and forming a chamber to receive said bag, and,

c. connecting means integral with said funnel for detachably fastening said funnel in a generally upright raised position to the lip of said cup and extending inwardly of said lip,

d. said funnel being formed with a restricted opening at

its upper and lower ends whereby a teabag in said chamber may be reciprocated through said lower opening into

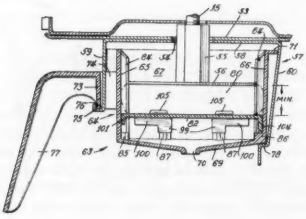


and out of said cup by means of the teabag string passing through the said upper opening.

3,861,285
COFFEE MAKING MACHINE CONVERTIBLE BETWEEN FUNNEL-FILTER OPERATION AND POUCH PACK OPERATION

John C. Martin, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Division of Ser. No. 252,269, May 11, 1972, Pat. No. 3,793,935. This application Aug. 2, 1973, Ser. No. 385,032
Int. Cl. A47j *31/14*
U.S. Cl. 99—295 **5 Claims**



3. A funnel for holding a pouch pack of ground coffee comprising: a rectangular body portion open at the top and having an apertured bottom wall, and a removable rectangular plate overlying and spaced from said bottom wall for underlying said pouch pack, corner portions of said plate being omitted for flow of coffee extract therepast.

3,861,286
APPARATUS FOR COOKING FOOD IN HOT NON-AQUEOUS LIQUIDS UNDER PRESSURE

Charles Jere Albright, Chicago; Clifford E. Fitch, Sr., and Clifford E. Fitch, Jr., both of South Holland, all of Ill., assignors to Chemetron Corporation, Chicago, Ill., by said Albright

Division of Ser. No. 881,230, Dec. 1, 1969, Pat. No. 3,793,940. This application June 7, 1973, Ser. No. 367,811
Int. Cl. A47j *37/12*
U.S. Cl. 99—327 **6 Claims**

1. An apparatus for cooking food in hot, non-aqueous liquids under pressure, comprising,

a. a supporting framework,

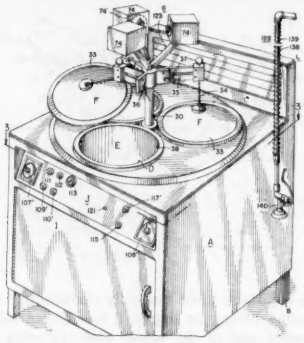
b. a timer-activated valve mechanism supported on the framework,

c. three vertically disposed, open-top, cylindrical receptacles juxtaposed and rotatively supported on the timer-activated valve mechanism,

d. a closure-lid for the recurring sealing of each receptacle opening,

e. means for maintaining a predetermined temperature-pressure condition in the respective receptacle, and

f. means operatively connecting the timer-activated valve mechanism with the receptacles for controlling the food-cooking periods successively in the receptacles, effecting the subsequent transfer of the hot liquid and pressure from one receptacle to another at the conclusion of each timed cooking period, and permit the temporary removal of a respective closure-lid from the one receptacle subject to the withdrawal of the cooked food and the insertion of food for cooking after the replacement of the respective closure-lid, said means effecting the successive rotation of each receptacle through six stations for temporary halt

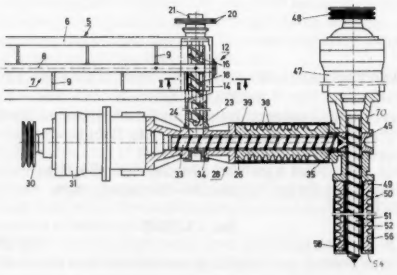


at each station, at the first station for the removal and insertion of food in one receptacle, at the second station for the injection into the one receptacle of hot liquid and air-pressure, at the third station for initiating the cooking of food in the one receptacle, at the fourth station for continuing the cooking of the food in the one receptacle, at the fifth station for completing the cooking of the food in the one receptacle, and then to the sixth station for the removal of the hot liquid and air-pressure from the one receptacle subject to the one receptacle being returned to the first station for the removal of the cooked food.

3,861,287
EXTRUDER DEVICE FOR PREPARING FOODSTUFFS

Josef Manser, Uzwil, Switzerland, assignor to Gebrueder Buehler AG, Uzwil, Switzerland

Filed May 11, 1973, Ser. No. 359,525
Claims priority, application Switzerland, May 16, 1972, 7217/72
Int. Cl. A47j *27/14*
U.S. Cl. 99—348 **10 Claims**



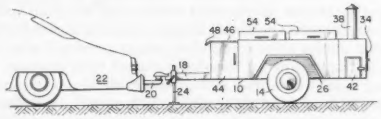
1. An extruder device for manufacturing solid foodstuffs, especially snacks, dog food, flakes or crispies, of the puffed or non-puffed varieties, comprising:

a mixing means for mixing foodstuff ingredients having a dough-like consistency;
a transporting means, connected to said mixing means and having an outlet opening, for transporting the foodstuff ingredients from said mixing means to said outlet opening;
a cooking feed screw means for cooking and transporting the foodstuff ingredients comprising a cooking cylinder having a receiving opening, at one end thereof, disposed on said outlet opening of said transporting means, said cooking cylinder having an internal bore with a first helical rotor internally disposed therein and a discharge opening at the other end thereof;
a cooling feed screw means for cooling and transporting foodstuff ingredients comprising a cooling cylinder having an inlet opening at one end thereof disposed on said discharge opening of said cooking feed screw means, said cooling cylinder having an internal bore with a second helical rotor internally disposed therein; and
said cooling cylinder being disposed with the longitudinal axis thereof being inclined to the longitudinal axis of said cooking cylinder.

3,861,288
MOBILE BARBECUE PIT

Exie Cluff, Sr., and Alsie Cluff, Sr., both of P.O. Box 261, Corrigan, Tex. 75939

Filed July 26, 1973, Ser. No. 382,765
Int. Cl. A47j *37/07*
U.S. Cl. 99—357 **1 Claim**

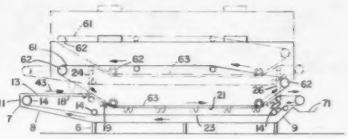


1. A mobile barbecue pit comprising:
a wheeled frame having means at one end detachably engageable with a rear disposed coupling of a vehicle whereby the frame can be pulled from place to place, said frame having fender means disposed over the wheels, one fender means having a section adapted to receive a compressor;
a fire box mounted on the frame at the front end;
a grill disposed over the box;
a chamber at the rear of the frame surmounted by a smoke stack, said stack extending vertically upwards above the frame;
a hollow compartment disposed between the box and chamber and conducting heat and gases from the box to the stack, the hollow compartment having removable grates to support meat for barbecuing;
additional storage and freezer compartments spaced from each other and from the hollow compartment;
freezer means in the freezer compartment; and
a compressor for operating the freezer means and disposed in said fender means section.

3,861,289
TACO SHELL FRYER

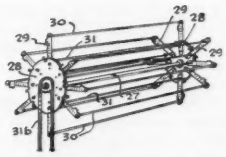
Edward D. Baker, Belmont, and Nils Lang-Ree, San Jose, both of Calif., assignors to NPI Corporation, Burlingame, Calif.

Filed Nov. 8, 1973, Ser. No. 414,158
Int. Cl. A47j *37/12*
U.S. Cl. 99—404 **8 Claims**

1. A taco shell fryer comprising an open top tank for cooking oil; a pan conveyor including a pair of transversely spaced chains arranged in closed loops parallel to each other; means for supporting at least a portion of said pan conveyor to travel in a path leading down into, through and up out of said tank; a rod connected at opposite ends to said chains and extending transversely of said path; a pair of complementary pan plates hinged on and extending from opposite sides of said rod on said pan conveyor; a belt conveyor; a flexible link belt suspended transversely in a catenary curve from said belt conveyor; and means for supporting said belt conveyor to lower said belt from a position spaced above said rod and pan plates into a position draped over and at least partially around said rod and said pan plates as said pan conveyor travels in said path.

3,861,290
BARBECUING APPARATUS

Acey Ringo, 320 E. 47th St., Chicago, Ill. 60615

Filed June 29, 1972, Ser. No. 267,643
Int. Cl. A47j *37/04*
U.S. Cl. 99—427 **8 Claims**



1. Barbecuing apparatus comprising a heat source, a rotary shaft located above and in spaced relation to the heat source, a plurality of trays disposed about the shaft so as to extend radially outward therefrom in circumferentially spaced relation to one another, each tray being formed of a basket with an openable top, a pair of disks secured to the shaft so as to rotate therewith and located beyond radially extending ends of the trays, the peripheries of the disks lying radially inward of the outer side edges of the trays, two pluralities of radial arms, each plurality being equal in number to the trays, the arms of one plurality being secured to one disk and those of the other plurality to the other disk, each arm extending radially beyond the periphery of the associated disk along an adjacent radially extending end of one tray about to the outer side edge thereof, and means associated with the disks and the arms for removably connecting the baskets thereto.

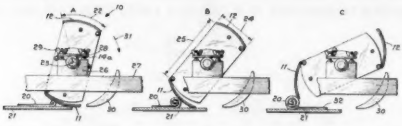
3,861,291
ROLLING APPARATUS

Joseph A. Guzaski, Franklin Park, Ill., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation-in-part of Ser. No. 321,486, Jan. 5, 1973, abandoned. This application Apr. 12, 1973, Ser. No. 350,555
Int. Cl. A21c *11/00*
U.S. Cl. 99—450.2 **11 Claims**

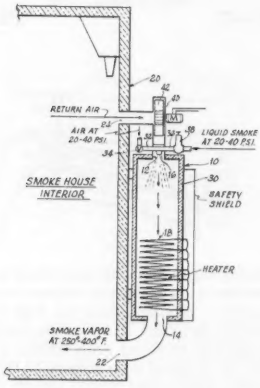
1. Apparatus for producing rolls from a flat strip of material comprising:
means for supporting and conveying said strip along a predetermined path transversely of the rolling direction;
frame means overlying said path and mounted for reciprocal motion over said path; and
rolling means rotatably mounted on said frame, said rolling means having an arcuate rolling member with a displace-

able portion positioned and adapted to engage said strip to form a roll of material during rotation of said rolling



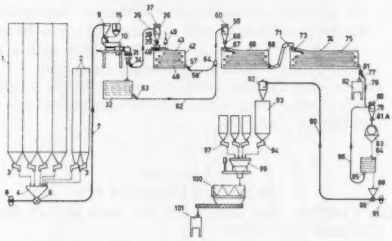
means and movement of said frame in timed relation with said strip.

3,861,292
LIQUID SMOKE REGENERATOR
Robert D. Gilliland, Louisville, Ky., and Hugo E. Wistreich, Chicago, Ill., assignors to B. Heller & Company, Chicago, Ill.
Filed Apr. 30, 1973, Ser. No. 355,585
Int. Cl. A23b 1/04
U.S. Cl. 99—476 **12 Claims**



1. The combination comprising a smokehouse having a smoke inlet at one level and a smoke outlet at another level, and a smoke regenerator for the regeneration of smoke from liquid smoke comprising an elongate housing having an inlet at one end portion and an outlet at the other end portion, a first passage communicating the outlet from the smokehouse with the inlet to the regenerator housing and another passage communicating the inlet to the smokehouse with the outlet from the regenerator housing, a recirculating means in communication with the first passage for withdrawing gaseous vapors from the smokehouse and recirculating such gaseous vapors through the inlet to the regenerator housing and through the housing for return to the smokehouse, spray means adjacent the inlet to the regenerator housing, means communicating the spray means with a source of liquid smoke and a source of gas under positive pressure whereby the liquid smoke is sprayed as fine particles into the stream of gaseous vapors recirculated through the regenerator housing, heaters located within the regenerator housing in spaced apart relation from the inlet and adjacent the outlet for heating the gaseous vapors and spray to a temperature above vaporization temperature whereby the liquid smoke is reconverted to water vapor and smoke which is admixed with the recycled gaseous vapors from the smokehouse for introduction through the inlet into the smokehouse.

3,861,293
APPARATUS FOR MAKING FOODS AND FEEDS
Aldo Buffa, Paris, France, and Adolf Holliger, Uzwil, Switzerland, assignors to Unicef, Aldo Buffa and Gebruder Buehler AG, Uzwil, Switzerland
Division of Ser. No. 149,712, June 3, 1971, abandoned. This application Oct. 16, 1972, Ser. No. 297,645
Claims priority, application Great Britain, June 5, 1970, 27431/70
Int. Cl. A23k 1/10
U.S. Cl. 99—484 **10 Claims**

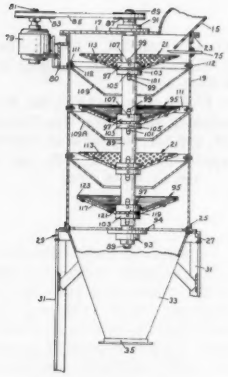


1. Food making apparatus comprising, in combination, mixing means for mixing solid starchy raw materials with an aqueous solution containing enzymes; heating means for heating said mixing means; extruding means communicating with said mixing means for forming a shaped food product; predrying means receiving said product; conveying means for conveying the pre-dried product; a fermentation apparatus receiving said product from said conveying means, said fermentation apparatus comprising a substantially closed vessel and a continuous conveyor therein consisting of a succession of belt conveyors superimposed one above the other, heating means and air circulating means for circulating high humidity air in said vessel; at least one drying unit including conveying means therein receiving said product and drying the same; and comminuting means receiving said dried product.

3,861,294
METHOD AND APPARATUS FOR TREATING WHOLE FEED GRAIN
Kenneth M. Coldren, 1524 Goldspur Dr., Fort Wayne, Ind. 46804
Filed Sept. 20, 1971, Ser. No. 181,768
Int. Cl. B01f 7/16
U.S. Cl. 99—516 **13 Claims**

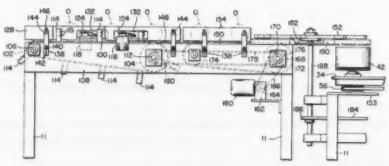
1. An apparatus for enabling the adjustment of the moisture content of the kernels of a cereal grain which comprises a cylindrical container positioned so as to have a vertical axis, a shaft mounted for rotation about said axis, a first rotor mounted on the shaft for rotation therewith, said first rotor having a top surface having a plurality of upwardly extending projections thereon, a second rotor mounted on the shaft for rotation therewith, said second rotor being below and spaced from said first rotor, and said second rotor having a top surface having a plurality of upwardly extending cutting elements thereon, first kernel directing means for depositing kernels having plasticized hulls upon said top surface of said first rotor, second kernel directing means for directing kernels toward said top surface of said second rotor after said kernels have contacted said top surface of said first rotor, and means for rotating said shaft so as to propel said kernels centrifugally across said top surfaces of said first and second rotors to contact said projections and cutting elements thereon so that

said kernels are blistered at said first rotor with said blisters being perforated at said second rotor substantially without



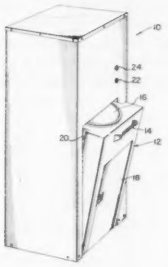
shattering the kernels and substantially without removing the hulls of said kernels.

3,861,295
ONION SKINNING MACHINE
Emanuel F. Boyer, 4826 Oak Orchard Rd., Albion, N.Y. 14411
Filed June 11, 1973, Ser. No. 368,858
Int. Cl. A23n *7/00*
U.S. Cl. 99—516 **7 Claims**



1. A machine for skinning onions comprising
a support,
a plurality of containers movably mounted on said support in spaced relation,
each of which is open at top and bottom
means for moving said support to move said containers successively from a load station, at which onions may be loaded into successive containers, to a discharge station at which onions are discharged from the several containers successively,
a plate disposed adjacent the bottom of each container,
means for moving each plate during movement of said support to effect tossing and whirling of the onions around in the associated container, and
means operative when each container arrives at the discharge station to swing the container out of registry with the associated plate to discharge onions from the container.

3,861,296
APPARATUS FOR THE COMPACTION OF REFUSE MATERIAL AND THE LIKE
Milton Clar, 9408 Linden Ave., Bethesda, Md. 20014
Filed June 9, 1972, Ser. No. 261,325
Int. Cl. B30b *15/28*
U.S. Cl. 100—53 **21 Claims**

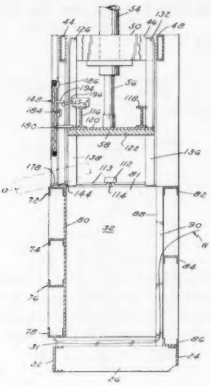


1. Apparatus for compacting material such as refuse, comprising a cabinet having a frame, a carriage having a shell with an opening at the top thereof through which said material may be admitted to the shell, means for pivotally supporting said carriage upon said frame for movement about a horizontal pivotal axis between a rest position at which said opening is within said cabinet and is inaccessible and an access position at which said opening projects outside said cabinet and is accessible for the reception of material, and means within said cabinet for compacting material within said carriage when said carriage is in its rest position, said carriage having a substantially flat bottom wall against which said material is compacted by said compacting means, said means for pivotally supporting said carriage comprising a hinge coupling said bottom wall to said frame at an intermediate region of said substantially flat bottom wall above the lower extremity of the cabinet, whereby said carriage may be substantially counterbalanced for pivotal movement about said pivotal axis, said frame having means engaging and supporting said bottom wall from below when said carriage is in said rest position with said substantially flat bottom wall extending substantially horizontally at opposite sides of said pivotal axis.

3,861,297
BALER
Robert W. Considine, Detroit, and John W. Arthurs, Pontiac, both of Mich., assignors to Bra-Con Industries, Inc., Livonia, Mich.
Continuation-in-part of Ser. No. 132,090, April 7, 1971, abandoned. This application Nov. 21, 1972, Ser. No. 308,472
Int. Cl. B30b *15/26*
U.S. Cl. 100—53 **8 Claims**

1. In a baler, a material baling chamber open at the top, a press platen vertically reciprocable through the open top of the chamber and having an upper position spaced at one side above an upper edge of the chamber providing an access opening for deposit of material into the chamber, a safety gate vertically shiftable across said access opening between an open position above the opening and a closed position covering the opening, means coupling the gate to the platen for vertical movement therewith and in advance of the platen during descent, said means including a lost motion coupling allowing descent of the platen relative to the gate and lifting of the gate during ascent of the platen, and control means responsive to descent of the platen relative to the gate prior to full closure of the gate to interrupt descent of the platen, characterized in that said control means includes a first element actuated by full closure of the gate and a second element

actuated by a predetermined descent of the platen relative to the gate with such means interrupting platen descent upon



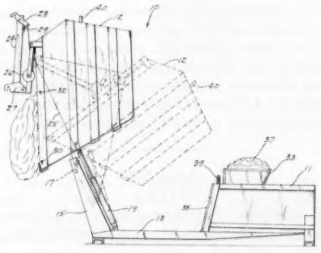
actuation of the second element before actuation of the first element.

3,861,298

REFUSE HANDLING DEVICE

Norman R. Melos, 825 N.E. 51st Ave., Des Moines, Iowa 50317

Filed May 2, 1973, Ser. No. 356,579
Int. Cl. B30b *15/32*
U.S. Cl. 100—218 **3 Claims**



1. A refuse handling device including:

a frame having a base section and a pair of upstanding frame members with vertically oriented slots formed in the upper portion thereof;

a hydraulically operated packer unit mounted on the base section of the frame and including an outlet at one end thereof through which compacted refuse may be expelled;

a container pivotally connected to the upstanding frame members and including an inlet opening in registration with the outlet opening of the packer unit when the container is in a filling position;

a pair of hydraulic rams rigidly connected at one end to the base section of the frame and connected at the other end to the container;

pivot pins attached to the container and moveable within the slots of the upstanding frame members, the pins being moved upwardly within the slots upon initial extension of the hydraulic rams and the container being pivoted to a dumping position upon cotinued extension of the hydraulic rams; and

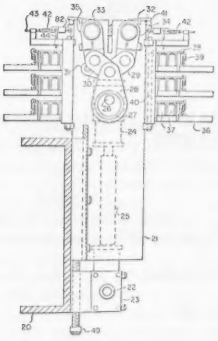
a foldable door over the top of the container, the folding door being automatically latched shut when the container is in a filling position and being automatically unlatched and folded open upon extension of the hydraulic rams.

3,861,299

HIGH SPEED AUTOMATIC CARD EMBOSSER

Jacob H. Drillick, Hackensack, N.J., assignor to Data Card Corporation, St. Paul, Minn.

Division of Ser. No. 57,960, July 24, 1970, Pat. No. 3,638,563, which is a continuation-in-part of Ser. Nos. 769,245, Oct. 21, 1970, abandoned, and Ser. No. 861,432, Sept. 26, 1969, abandoned. This application Dec. 14, 1971, Ser. No. 208,004
Int. Cl. B44b *5/00*
U.S. Cl. 101—18 **1 Claim**



1. In a credit card embossing machine, including,

a. a font of selectively operable character punch and die pairs,

b. a drive mechanism for operating said punch and die pairs,

c. selective means for engaging said drive mechanism and each punch and die pair,

d. means for indexing the credit card past the font of punch and die pairs,

e. die control means to selectively move a die from its withdrawn position to a position contacting the face of the credit card,

f. punch control means to move a punch from its withdrawn position to a position contacting the rear of the credit card,

g. said die control means and said punch control means operable simultaneously to move the die and punch from the withdrawn position to the card contacting position,

h. said punch control means including means to move said punch into said card to complete said punching operation and the withdrawing of said punch,

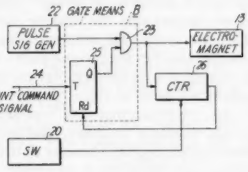
i. means associated with said die control means to hold said die stationary during said punching operation and to withdraw it simultaneously with said punch,

whereby said credit card may be indexed to the character punching position, said die and punch advance to said card, said punch completes said embossing operation while said die remains stationary and said credit card is not moved laterally during the embossing operation.

3,861,300
ROTARY PRINT DRUM HAVING AN INTERMITTENT DRIVE

Yoshinori Chida, and Seiki Mizutani, Matsudo, both of Japan, assignors to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Aug. 7, 1972, Ser. No. 278,470
Int. Cl. B41j 23/34
U.S. Cl. 101—93.22 7 Claims



1. A printing mechanism comprising:

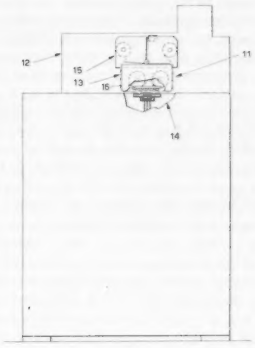
a rotatable print drum containing around the periphery thereof a plurality of circumferentially spaced-apart sets of print type; drive means responsive to a succession pulse signals for rotationally driving said print drum in an intermittent manner through a succession of angular increments each corresponding to one pulse signal, said drive means comprising a ratchet wheel connected to said print drum for rotational movement therewith, a pawl coacting with said ratchet wheel to effect intermittent stepwise rotation of said ratchet wheel in response to recoprocatory movement of said pawl, and pviotal driving lever connected to said pawl, an armature affixed to said driving lever, and a electromagnet responsive to each pulse signal to create therearound a magnetic field having sufficient strength to attract said armature towards said electromagnet accompanied by pivotal movement of said driving lever and pawl to effect angular movement of said print drum through one angular increment; detecting means for detecting when said drum has been angularly driven to a predetermined angular start position during each rotational cycle and providing a corresponding output signal; and a control circuit operative to develop a succession of pulse signals and apply same to said electromagnet to effect intermittent rotation of said print drum and inclding means responsive to said output signal for terminating the application of the pulse signal to said electromagnet after said print drum has been driven through a prescribed nubmer of angular increments and returned to said start position, said control circuit comprising a gate circuit receptive of said succession of pulse signals and operative when in a gating state to gate the pulse signals to said electromagnet and operative when in a blocking state to block application of the pulse signals to said electromagnet, and counting means receptive of the pulse signals applied to said electromagnet and operative in response to said output signal for counting a predetermined number of pulse signals and then delivering a reset signal to said gate circuit to place same in said blocking state.

3,861,301
MACHINE FOR PRINTING MULTI-LINE TEXTS OF ALPHABETICAL AND NUMERICAL CHARACTERS ON A DOCUMENT

Emilio Di Marzio, Venice, and Ivo Spiazzi, Cusano Milanino, both of Italy, assignors to Firma S.p.A., Milan, Italy

Filed Nov. 21, 1973, Ser. No. 418,038
Int. Cl. B41j 9/10
U.S. Cl. 101—93.08 8 Claims

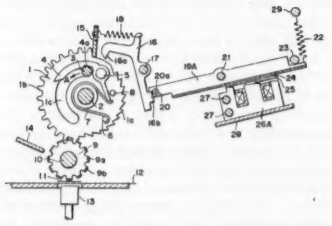
1. A machine for printing a multi-line text of alphabetical and numerical characters on a document, said text being formed from m lines and k typographical spaces per line, comprising a reading complex for data, stored on a support means, relative to the identity and position of the various alphabetical and numerical characters contained in the text to be printed, and a printing assembly controlled by said reading complex, said printing assembly being composed of a support unit for print characters and a support unit for print hammers arranged to co-operate with said print characters for printing alphabetical and numerical characters on a document fed between said hammers and said print characters, said support unit for print characters containing an ordered succession of as many rows of n (n k) like print characters as there are alphabetical and numerical characters in the language adopted for the text to be printed, said support unit for print hammers containing a succession of m rows, spaced apart by one step in said succession of rows of print characters, of n



print hammers provided with respective means for their independent operation into a position of engaement with respective print characters, said units being disposed and made to move one with respect to the other in the direction of development of said succession of rows of print characters in such a manner that one group, different each time, of m successive rows of print characters, comes in turn into a printing area in which the print characters are in a position facing, and suitable for engagement with, the m rows of print hammers, said support means for stored data being divided into a number m of store sectors, in each of which is stored the data relative to the identity and position of the alphabetical and numerical characters contained in one line of the text to be printed, and each of said sectors being divided in its turn into a number h (k h n) of subsectors, each of which is provided with an ordered succession of storage positions in which the data relative to the alphabetical or numerical character situated in a determined position in a line of the text to be printed is stored according to a code which comprises the use of storage positions increasingly more distant from a reference position for storing data regarding the identity of progressively successive alphabetical and numerical characters in accordance with an order of succession corresponding to that of the print characters contained in the printing assembly, said reading complex comprising at least one reading device including m readers, each of which is designed for reading the data stored in one sector of the support means and comprises in its turn h reading elements, each of which is controlled so as to scan in succession, starting from the aforementioned reference position, the various storage positions of a subsector of the support means in such a manner as to read the character identity data stored in a determined storage position of said subsector in any moment of time, the time lag of which from the moment of scanning said reference position depends on the distance between the storage position used and said reference position, the h reading elements included in each reader being independently connected to the means for operating the same number of hammers of one of the m rows of hammers

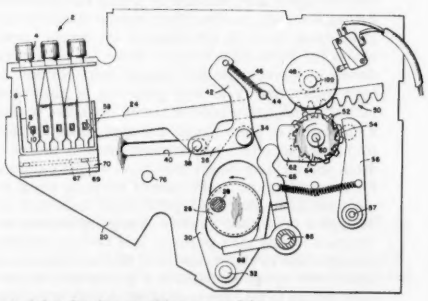
of the printing assembly so as to cause the independent operation of these latter at each reading of a piece of data stored in the various subsectors of a store sector of the support means, and being made to scan the respective subsectors of the support means simultaneously and in phase with each other so that all the data regarding the identity of equal characters stored in one sector of the support means is read simultaneously and gives rise to the simultaneous operation of all the hammers associated with the reading elements which read this data and then to the simultaneous printing of all the equal characters contained in one line of the text to be printed, the reading movement and the mutaual movement of the two units of the printing assembly being synchronised and put into mutual phase in such a manner that the reading of a determined piece of data regarding the character identity by one of the reading elements of a determined reader always coincides with the appearance of the corresponding row of print characters in a position facing those hammers forming part of the row associated with the reading elements of that reader, and the readers associated with the, in turn, successive rows of hammers in the direction of mutual movement of the two units of the printing assembly being controlled in such a manner as to scan the respective sectors of the support means with mutual time lags corresponding to one step in the succession of storage positions in the support means and in the succession of rows of hammers and print characters of the printing assembly, so that the control actions for the operation of a row of hammers of the printing assembly for the printing of a group of equal alphabetical or numerical characters on a line of the document to be printed are delayed, with respect to those for the operation of the previous row of hammers for the printing of the same alphabetical or numerical characters on the previous line of the document, by a time sufficient to allow the corresponding row of print characters to move from the position facing said previous row of hammers to the position facing the row of hammers being operated.

3,861,302
PRINTER
Nagao Mizutani; Masamitsu Nojima, and Yasuo Okawara, all of Tokyo, Japan, assignors to Citizen Tokei Company Limited, Tokyo, Japan
Filed Feb. 2, 1973, Ser. No. 328,985
Claims priority, application Japan, Feb. 4, 1972, 47-13127
Int. Cl. B41j *1/22*
U.S. Cl. 101—99 **2 Claims**



1. A printer comprising a plurality of typewheels mounted for rotation in side by side relation to one another, a plurality of movable selector elements disposed in side by side relation to one another adjacent said typewheels respectively, operator means for driving said selector elements, each of said selector elements having a first toothed portion thereon in driving engagement with one of said typewheels and also having a second toothed portion of ratchet configuration thereon, a plurality of electromagnets each of which is adapted to be energized when an associated one of said typewheels is rotated to a desired printing position, a plurality of restraining elements rotatably supported on a common shaft, each of said restraining elements being disposed adjacent one of said electromagnets for rotatable movement about said shaft when its associated electromagnet is energized, a plurality of engaging members rotatably supported on a further shaft, each of said engaging members including a portion disposed adjacent one of said restraining elements whereby each of said restraining elements restrains its associated engaging member against rotation about said further shaft when its associated electromagnet is de-energized and releases said engaging member for rotation about said further shaft when said associated electromagnet is energized, a plurality of springs coupled to said engaging members respectively for biasing said engaging members in a direction toward the ratchet toothed portion of its associated selector element for causing each of said engaging elements to engage one of said ratchet toothed portions when said engaging element is released from restraint by energization of the electromagnet and restraining element associated with said engaging member, said plurality of restraining elements comprising the plurality of first restraining elements positioned relative to their associated electromagnets for rotation in a predetermined first direction about said common shaft to release their associated engaging members from restraint, and a plurality of second restraining elements, interleaved in position relative to said first restraining elements, and positioned relative to their associated electromagnets for rotation in a predetermined second direction, opposition to said first direction, about said common shaft to release their associated engaging members from restraint.

3,861,303
TICKET ISSUING MACHINE
Frank E. Dorn, Jr., Baldwin, Md., assignor to American Totalisator Company, Inc., Towson, Md.
Filed Nov. 30, 1972, Ser. No. 310,767
Int. Cl. B41f *13/60*
U.S. Cl. 101—227 **8 Claims**



1. A ticket issuing machine comprising
manually operable means for introducing a selection of a number of tickets from a group of possible choices to be issued in a single ticket issuing operation in response to a single selection,
driving means,
a type-carrying printing drum, connected to and rotatable by said driving means, for printing continuous ticket stock and for feeding said ticket stock by virtue of the contact between the printing type and the ticket stock whereby one complete ticket is printed and fed with each rotation of said drum in a ticket issuing operation,
means for registering the numerical selection introduced by said manually operable means,
means for reducing the contents of said registering means by one as each rotation of the drum takes place,
a clutch,
cam means connected through said clutch to said drum so as to be rotatably driven through a complete cycle with each rotation of the printing drum if the clutch remains engaged,

means operable by said cam means at the end of its complete cycle for stopping the operation of the ticket issuing machine,

means responsive to the contents of said registering means for disengaging said clutch during the first rotation of the drum in a ticket issuing operation in which the number of tickets selected is greater than one and for reengaging said clutch during the last rotation of the drum so that said cam means does not reach the end of its complete cycle until the selected number of tickets is issued.

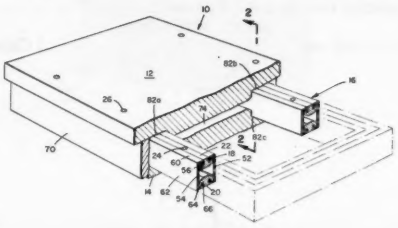
3,861,304
PRESSURE ACTUATOR

Robert E. Merrill, San Jose, Calif., assignor to Daniel A. Bernstein, Antioch, Calif.

Continuation-in-part of Ser. No. 199,569, Nov. 17, 1971, Pat. No. 3,742,537. This application June 28, 1973, Ser. No. 374,453

Int. Cl. B30b *1/32*

U.S. Cl. 100—269 A **6 Claims**



1. A pressure actuator working assembly comprising first and second platens in confronting relationship;

a pressurizable conduit intermediate said platens having an inner surface defining with said platens a closed inner chamber, wherein said pressurizable conduit comprises a rigid continuous track having groove means in a first surface extending the length of said track for receiving edges of an elastomeric belt;

an elastomeric belt having its opposite edges snugly fitted into said groove means and enclosing the surface of said track opposite said first surface to form a closed chamber with said track and track port means in said track communicating with said closed chamber formed by said track and said belt;

a wall extending from one of said platens toward the other of said platens in close juxtaposition to the perimeter of said conduit and said other of said platens;

an inner chamber port in one of said platens communicating with said inner chamber; and

an opening in one of said platens in alignment with said track port means.

3,861,305
MULTICOLOR INK RIBBON CONTROL FOR HIGH SPEED LINE PRINTERS

Rentaro Sasaki, Takasaki, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

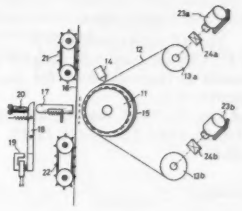
Filed May 14, 1973, Ser. No. 359,904

Claims priority, application Japan, May 22, 1972, 47-49846; Sept. 19, 1972, 47-93272

Int. Cl. B41f *31/16*

U.S. Cl. 101—336 **9 Claims**

1. A high speed printing machine using printing types and a wide ink ribbon having a surface sectioned into bands of different colors, characterized in that said ribbon includes signal means, said signal means representing different colors respectively, a detection means disposed opposite said signal means to detect the color of the band positioned in a print position with respect to the printing types so as to correctly



position the ribbon surface band of the desired color in alignment with selected ones of said printing types.

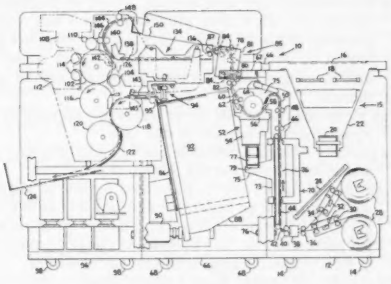
3,861,306
COMBINED ELECTROSTATIC-LITHOGRAPHIC DUPLICATING PROCESS AND APPARATUS

Robert Clark DuBois, Fairfield; Philip Pollak, Jr., Westport, and William A. Ross, Darien, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Mar. 21, 1974, Ser. No. 453,274

Int. Cl. B41m *1/00*

U.S. Cl. 101—450 **8 Claims**



1. A method of making multiple lithographic copies of an original document comprising the steps of:

A. providing a sheet of flexible master material comprising a layer of photoconductive material on a conductive substrate,

B. uniformly electrostatically charging the master sheet,

C. thereafter exposing the master sheet by subjecting the master sheet to a pattern of illumination corresponding in contrast to the image of indicia on an original document to be copied, thereby leaving a latent electrostatic image of the original document on said master sheet,

D. thereafter developing the latent electrostatic image by applying electrostatically attractable toner particles to the latent image on said master sheet,

E. thereafter moving the master sheet through an orienting zone in which the master sheet is properly aligned, both longitudinally and laterally, with respect to the master cylinder of a rotary printing press, after which the master sheet is transferred from the orienting zone to the master cylinder,

F. thereafter applying an etching solution to the master sheet while the latter is held to the master cylinder to render the non-image areas of the master sheet hydrophilic,

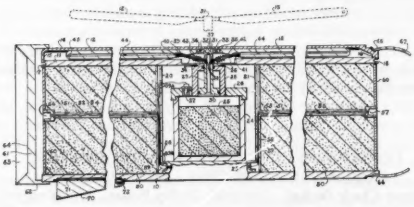
G. sequentially applying a moistening fluid and lithographic ink to the master sheet during rotation of the master cylinder, and

H. sequentially feeding copy sheets from a supply thereof to a transfer zone wherein ink deposited on the image areas of the master sheet is transferred to the copy sheet.

3,861,307
FLARE ARRANGEMENT

Charles J. Litz, Jr., Cinnaminson, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 23, 1973, Ser. No. 418,798
Int. Cl. C06d *1/04;* **F42b** *13/40*
U.S. Cl. 102—35.4 **6 Claims**



1. A self sustaining flare arrangement for illuminating a predetermined area from a substantially constant elevation thereabove, comprising

a combustible flare tube housing a pair of longitudinally spaced cylindrical flare propellant grains and a central gas generator unit therebetween, each of said flare grains having an outer end surface containing an igniter, said unit housing a gas generating propellant and an igniter therefor,

an elongated disposable cover removably secured to a peripheral surface portion of said tube,

a plurality of hollow rotatable blades underlying said cover and secured to a laterally extending piston rod,

said piston rod having an outer end portion in alignment with said cover, an inner flange portion and an intermediate hollow portion slidably and rotatably mounted in said gas generator unit, said hollow and flange portions being in fluid communication with said gas generator,

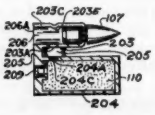
a plurality of flexible ducts fluidly communicating a corresponding hollow blade with said hollow piston portion, and

means for electrically initiating said gas generating igniter and each of said flare grain igniters to burn said flare grains, eject said cover, and extend and rotate said blades and piston rod.

3,861,308
AMMUNITION AND WEAPON SYSTEMS

Andrew J. Grandy, 2707 Grant Ave., North Hills, Pa. 19038

Division of Ser. No. 239,595, March 30, 1972. This application Feb. 21, 1974, Ser. No. 444,594
Int. Cl. F42b *5/02*
U.S. Cl. 102—38 **15 Claims**



1. An ammunition capsule comprising,

a unitary capsule body having an elongated longitudinally extending cylindrical chamber, said chamber having a forward barrel portion for slidably receiving a projectile and a pressure chamber portion aligned with and rearward of said barrel portion,

a one-piece imperforate propellant capsule chamber which remains imperforate and is integral with and laterally offset from said elongated chamber, said propellant capsule chamber having a transverse section of substantially cylindrical configuration,

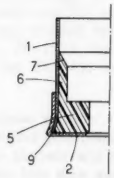
said propellant capsule chamber having metering orifice means for fluidly communicating the propellant capsule chamber with said pressure chamber, and

a primer carried by an exterior surface of said ammunition capsule body for igniting a capsule propellant charge.

3,861,309
SPORTING CARTRIDGE-CASE

Leon Veber, 4, rue Georges Lardennois, Paris, France

Continuation of Ser. No. 733,483, May 31, 1968, abandoned. This application Feb. 10, 1971, Ser. No. 114,370
Claims priority, application France, June 5, 1967, 67.109137; Oct. 31, 1967, 67.126622
Int. Cl. F42b *9/26*
U.S. Cl. 102—44 **3 Claims**



1. A shotgun cartridge case including

a substantially cup-shaped base having

a tubular chamber and

an extraction rim thereon,

a tubular casing having a greater height than said base and freely slidably insertable therein and fixedly attached thereto in pressure fit by a radially expanded end thereof within said extraction rim, and

means for securing and connecting said base and said casing to one another comprising

a generally annular wad of thermoplastic material susceptible of permanent deformation, said wad located within said base and said casing, and extending to the bottom of said base comprising

a uniformly cylindrical thick body portion,

a thinner central portion, said body portion and said central portion initially having a uniform diameter, and

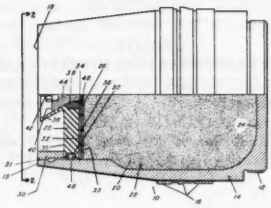
an outwardly projecting end portion of expanded diameter and of substantially triangular cross section, said wad being compressed to be permanently radially outwardly deformed to radially expand said end of said tubular casing and said cup-shaped base to fix and maintain them together in said extraction rim in a pressure fit assembly and said outwardly projecting end portion of exanded diameter is inwardly radially deformed to form a gas-tight pressure fit with said casing.

3,861,310

ZERO VOLUME ROCKET IGNITION SYSTEM

Robert C. Mertens, Rancho Cordova, and Donald W. Harper, Roseville, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 30, 1973, Ser. No. 393,240
Int. Cl. F42b *13/28*
U.S. Cl. 102—49.7 2 Claims



1. A zero volume rocket ignition system for an artillery launched projectile having an end-burning rocket motor which comprises:

a hollow cylindrically shaped housing having a closed threaded boss on its front end, for attachment to said projectile, and an open rear end;

propellant means completely filling the major portion of said housing for maximum propellant loading;

propellant igniting means operatively positioned immediately adjacent said propellant means;

nozzle means positioned immediately adjacent said propellant igniting means and closing said propellant means in said housing thereby controlling thrust of said rocket motor after launch which includes;

a disc shaped plate member having an integrally axially positioned nozzle protruding from its rear face;

a silver infiltrated tungsten hollow nozzle insert operatively positioned in said plate member's front face and axially aligned with said integral nozzle so as to form an erosion resistant nozzle orifice therein;

a nozzle plug slidably positioned in the nozzle orifice of said integral nozzle and said nozzle insert;

a retainer ring fixedly attached to the rear end of said housing and in peripheral abutment with the rear face of said plate member; and

an "O" ring assembly annularly positioned in the circumferential edge of said plate member for preventing the venting of gases generated by said propellant means around the peripheral edge of said plate member and thereby reducing the thrust from said rocket motor; and

wherein said propellant igniting means further includes;

an initiating squib fixedly positioned in said nozzle means and communicating with a squib fire channel axially positioned in said nozzle means;

at least one heat paper positioned intermediate said nozzle means and said propellant means; and

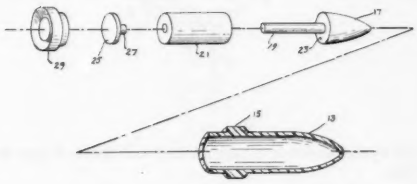
a fuze train spirally positioned intermediate said heat paper and said nozzle means having its inner front end communicating with said initiating squib for igniting said heat paper after being initiated by said squib.

3,861,311

PLASTIC SEMI ARMOR PIERCING INCENDIARY PROJECTILE

Stephen J. Bilsbury, Shalimar, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 13, 1973, Ser. No. 379,023
Int. Cl. F42b *11/14, 13/04*
U.S. Cl. 102—52 7 Claims



1. A plastic semi-armor piercing incendiary projectile for firing through a weapon having a rifled bore comprising a penetrating head having a ogival shaped head portion with a rod-like cylindrical tail portion of reduced diameter extending rearwardly therefrom, a flat shoulder forming the rearward surface of said head portion, a cylindrical core of incendiary material having a clearance opening through the central axis thereof, the opening in said cylindrical core being dimensioned to fit over the rod-like tail portion of said penetrating head and against the shoulder thereon, a steel pusher plate positioned against the rearward end of said incendiary core, said pusher plate including a short rod-like projection extending forwardly therefrom for insertion through the rearward end of the opening in said cylindrical core against the rearward end of the rod-like tail portion of said penetrating head, a one-piece plastic jacket having an open rearward end being dimensioned to completely enclose said penetrating head with said incendiary core and steel pusher plate attached thereto, said plastic jacket including an integral rotating band disposed therearound near the rearward end thereof and a plastic end cap ultrasonically welded to the open rearward end of said plastic jacket against the rearward surface of said pusher plate, said plastic jacket rupturing on impact with a target to expose the penetrating head which pierces any protective armor in the target area allowing the incendiary core to penetrate the target and break up by available kinetic energy into lethal particles causing fire to start in the presence of flammable material.

3,861,312

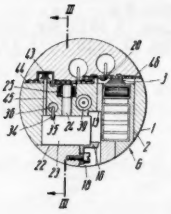
IGNITION DEVICE HAVING AN IGNITION SEQUENCE INCLUDING FUSE ELEMENTS FOR PREVENTING AN UNINTENTIONAL RELEASE

Manfred Held, Kuhbach, and Johann Spies, Pfaffenhofen, both of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed July 12, 1973, Ser. No. 378,587
Claims priority, application Germany, July 15, 1972, 2234849
Int. Cl. F42c *11/00, 15/40*
U.S. Cl. 102—70.2 G 8 Claims

1. In an ignition device including a turbine generator and having an ignition sequence including a fuse element prevented from an unintentional release, which ignition sequence is fed with voltage by said turbine generator upon reaching a predetermined rotational speed, the improvement comprised in that the turbine generator is supported movably, as a part of the ignition sequence, in relation to said fuse element and is movable into an unlocking position which unlocks the igni-

tion sequence to a pyrotechnic composition and including a threshold gate member, said pyrotechnic composition being



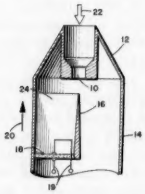
fed by the generator voltage through said threshold gate member.

3,861,313

ACOUSTICAL FUZE ACTIVATOR

Carl J. Campagnuolo, Chevy Chase, and Leonard Sieracki, Beltsville, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 18, 1966, Ser. No. 596,051
Int. Cl. F42c *15/00*
U.S. Cl. 102—70.2 G **9 Claims**



1. An acoustical signal generator for activating a fuze in a missile moving through a fluid medium comprising:

a. fluidic oscillator means in the missile comprising a resonant chamber for generating a fluid vibration signal having a frequency related to the speed of the missile relative to the medium and wherein all elements of the oscillator remain stationary with respect to the missile,

b. nozzle means for directing fluid to said resonant chamber, and

c. electrical transducer means responsive to said fluid vibration signal to produce an electrical signal for activating said missile fuze.

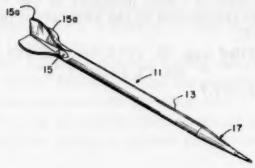
3,861,314

CONCAVE-COMPOUND POINTED FINNED PROJECTILE

Irwin R. Barr, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.

Filed Dec. 30, 1966, Ser. No. 606,453
Int. Cl. F41b *13/00*
U.S. Cl. 102—92.1 **4 Claims**

1. A one piece projectile adapted to curl and tumble on impact with a target, comprising: a long cylindrical shank section, a blunt nosed concave tapered forward end section integral with and materially shorter than said shank section,



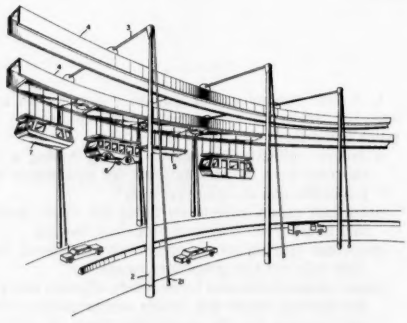
and a rear section integral with said shank section and having integral stabilizing fins formed thereon.

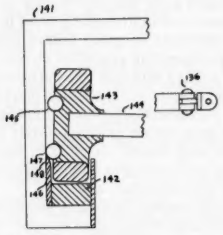
3,861,315

UNIVERSAL TRANSPORTATION SYSTEM BASED ON A CABLE SUSPENDED DUO-RAIL RAILROAD

Albert Rypinski, Teaneck, N.J., assignor to Duo-Mode Electric Transport System, Inc., Teaneck, N.J.

Continuation of Ser. No. 89,266, Nov. 11, 1970, abandoned. This application July 16, 1973, Ser. No. 379,203
Int. Cl. B61b *3/02, 13/00*
U.S. Cl. 104—18 **10 Claims**





1. A transportation system comprising:

a network of surface routes;

an overhead rail structure of inverted-U shape forming junctions with said surface routes, said structure having at least one generally horizontal bend and being provided with horizontal bottom flanges on the lower ends of the legs of the inverted U;

a multiplicity of self-propelled vehicles adapted to travel any of said surface routes;

a series of motor-driven vehicle carriers circulating on said structure, each of said carriers being provided with at least one pair of driven traction wheels riding said bottom flanges, the outer leg of said inverted U being formed at

said bend with a camming surface, the traction wheels adjoining said outer leg being provided with formations engageable with said camming surface by centrifugal force due to motion of the vehicle through the bend for lifting said adjoining traction wheels off the bottom flange normally supporting same; and

hoist means on said carriers engageable with any of said vehicles for lifting same off a surface route at one of said junctions and redepositing same on another surface route at another of said junctions.

3,861,316

FREIGHT CAR CLASSIFICATON SYSTEM AT LEVEL CLASSIFICATION YARD

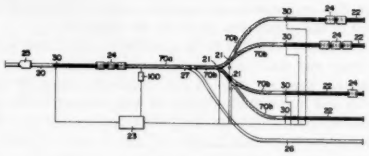
Shigezo Yamazaki, Tokyo; Mitsuru Wakao, Iwatsuki, and Yoshinori Kobayashi, Sagamihara, all of Japan, assignors to Japanese National Railways and Kayabakoyo-Kabushiki-Kaisha, both of Tokyo, Japan

Filed Apr. 25, 1974, Ser. No. 464,147

Claims priority, application Japan, Apr. 25, 1973, 48-46069

Int. Cl. B61b *1/00*

U.S. Cl. 104—26 R **4 Claims**



1. A freight car classification system at a level classification yard comprising:

a. Freight car movers installed along a receiving track and a number of classification tracks branched through switches from said receiving track and adapted to push or retard a freight car to a predetermined speed;

b. Freight car accelerator-retarders installed along the receiving and classification tracks between said freight car mover installed along said receiving track on the one hand, and said freight car movers installed along said classification tracks on the other hand, and adapted to accelerate or retard the freight car or cars to more than two predetermined speeds;

c. An automatic decoupling unit installed at a suitable position along said receiving track and adapted to lift a lock member out of any desired coupling between the freight cars running along said receiving track so that the cars may be disconnected from each other, and

d. A control unit for automatically controlling the operations of said freight car movers, automatic decoupling unit, and switches in accordance with a predetermined freight car classification program so that the cars on the receiving track may be sorted onto the desired classification tracks or in accordance with a predetermined reclassification program so that the classified cars on the classification tracks may be reclassified to make up a new train on said receiving track.

3,861,317

CLOSED LOOP TRANSIT SYSTEMS

Wyly Kenneth Crowder, 3255 Windcroft Dr., Pontiac, Mich. 48054

Filed Feb. 8, 1973, Ser. No. 330,660

Int. Cl. B61k *1/00*

U.S. Cl. 104—88 **2 Claims**

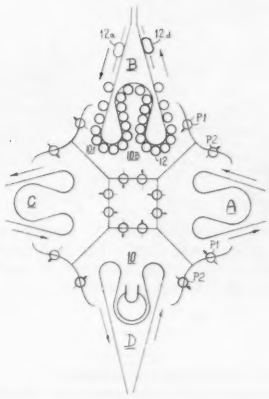
1. In a non-intersecting transit system for transporting passengers and materials between station terminals;

a plurality of major station terminals,

a plurality of local station terminals,

a plurality of closed express transit loops connecting said major station terminals,

a plurality of closed local transit loops connecting local station terminals and having access to said major station terminals,



some of said closed local transit loops conterminous with some of said closed express transit loops,

guide track means associated with said closed loops,

vehicle means independently and sequentially movable on said guide track means, and

power means for moving said vehicle means around said closed loops.

3,861,318

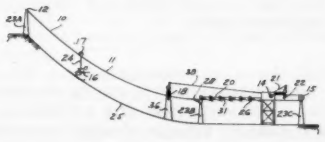
SAFETY SKI HARNESS CABLE SYSTEM

Michael J. Massa, 1718 48th St., New York, N.Y. 11204

Filed Oct. 5, 1973, Ser. No. 403,947

Int. Cl. E01b *25/14*

U.S. Cl. 104—113 **2 Claims**



1. A cable suspension system for guiding and protecting a skier, attached by a harness and suspension rope to the apparatus, comprising a suspension cable mounted on towers along the length of a ski run, with the suspension rope attached to the harness of the skier and fastened by a pulley to the said suspension cable, with the apparatus fitted with a retard means for slowing the forward progress of an attached skier at the end of the run, in which the suspension system is maintained in a taut condition by winch drum means.

3,861,319
TRANSPORTATION SYSTEM FOR HOSTILE ENVIRONMENTS

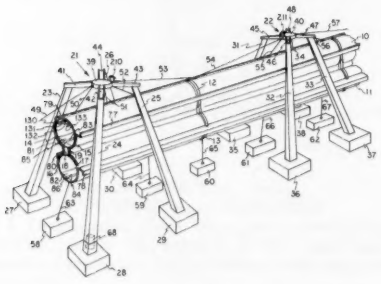
Egon Gelhard, Mehlemer Strasse 28, 5 Cologne 51, and H. Rudolf Gunkel, Egerlander Strasse 5a, 6390 Usingen, both of Germany

Continuation-in-part of Ser. No. 227,856, Feb. 22, 1972, Pat. No. 3,776,141. This application Aug. 14, 1972, Ser. No. 279,769

Claims priority, application Germany, Aug. 12, 1971, 2140244

Int. Cl. B61b *13/10*

U.S. Cl. 104—124 **59 Claims**



1. A transportation system comprising:

a. two conduits rigidly interconnected and disposed one above the other over at least the length of travel from one end to the other of the system, each of said conduits having a vehicle trackway received therein and extending therealong, said conduits further having vehicle power supply means disposed therein and extending at least a major portion of the length thereof;

b. a loop trackway at said opposite ends of said conduits, said loops uniting said conduits at said ends, one of said loops having vehicle filling means associated therewith and the other of said loops having vehicle emptying means associated therewith;

c. a plurality of supports for said conduits and said loops, said supports comprising a plurality of struts, a foundation for each strut, said struts being secured to said foundation at one end thereof, and a cross brace adjacent opposite, upper ends of said supports, said cross brace having members extending outwardly therefrom, said member being secured to said struts to form a unitary structure, the conduits being suspended from said supports over the length of travel of the system by a plurality of flexible cables connected between the supports and the upper conduit; and

d. a vehicle receivable within said conduits and movable along said trackway.

3,861,320
ELECTROMAGNETIC TRACK GUIDANCE ARRANGEMENT FOR A VEHICLE

Alfred Lichtenberg, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 5, 1974, Ser. No. 458,419

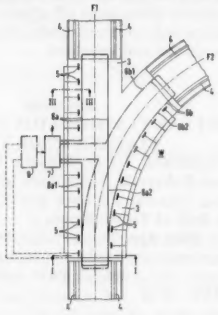
Claims priority, application Germany, Apr. 13, 1973, 2318756

Int. Cl. E01b *25/08*

U.S. Cl. 104—130 **2 Claims**

1. In an electromagnetic track guidance arrangement for a vehicle and which includes installed within the vehicle d-c current carrying conductor loops which react with stationary reaction members installed on the roadbed to generate at least one of a lifting and a lateral guidance force, an improved arrangement for selecting the direction of travel at a switch while maintaining lateral guidance comprising:

a. at least one stationary conductor loop installed in the area of the switch and having long sides disposed opposite the long sides of the conductor in the vehicle when the vehicle is in the switch with the direction of current in the



vehicle conductor loops opposite to the direction of current in the conductor loops on the roadbed;

b. a d-c source adapted to be selectively connected to said at least one stationary conductor loop; and

c. wherein the long sides of said conductor loop are vertically and horizontally displaced with respect to the long sides of said vehicle conductor loops.

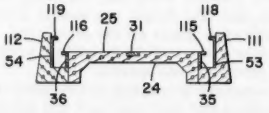
3,861,321
TRANSPORTATION SYSTEM AND VEHICLES FOR THE SYSTEM

Fred H. Goodnight, Dallas; George E. Walters, Arlington, and John P. Ward, Dallas, all of Tex., assignors to LTV Aerospace Corporation, Dallas, Tex.

Filed Dec. 27, 1972, Ser. No. 318,948

Int. Cl. B61b *13/00*

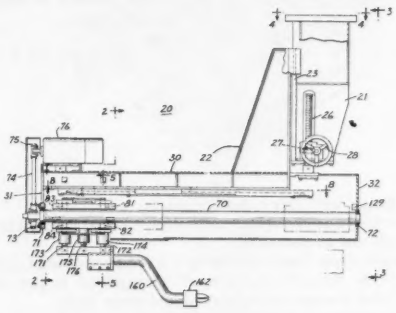
U.S. Cl. 104—148 MS **13 Claims**



1. A transportation system including: roadway comprising of a bed over which vehicles are movable longitudinally in levitated position and a pair of magnetic side guide rails extending longitudinally along opposite sides of the roadway; and a vehicle movable over the roadway, said vehicle having electromagnetic means at each side thereof aligned transversely and cooperable with adjacent side rails thereof and selectively energizable when the vehicle tends to move out of proper alignment with the roadway for maintaining the vehicle in properly aligned transverse relationship over the roadway, each said electromagnetic means when energized being attracted to an adjacent guide rail or said roadway; sensor means operatively associated with each of said electromagnetic means and a guide rail adjacent said electromagnetic means for providing control signals which vary in accordance with the distance of the electromagnetic means from the adjacent side rail; and control means responsive to said control signals for controlling energization of said electromagnetic means to cause said electromagnetic means to exert lateral forces on said vehicle when said vehicle tends to move out of properly aligned transverse relationship to said roadway to cause said vehicle to maintain a properly aligned relationship with the roadway, said control means including means for

varying the degree of energization of said electromagnetic means in accordance with the rate of change of said control signals.

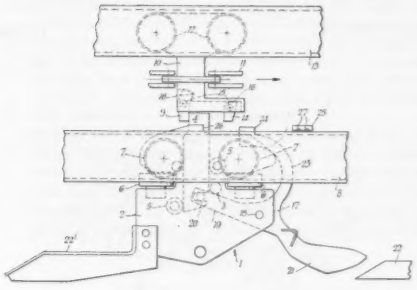
3,861,322
FRICTION DRIVE LOADER
James C. Danly, River Forest, Ill., assignor to Danly Machine Corporation, Chicago, Ill.
Filed Sept. 6, 1972, Ser. No. 286,690
Int. Cl. B61b *13/12*
U.S. Cl. 104—166 **13 Claims**



1. In a reciprocating loading device for loading and unloading a power press or the like, the combination comprising a frame, a horizontal drive shaft journaled in the frame and having means for rotating the same, way surfaces on the frame extending parallel to the drive shaft, a reciprocating carriage embracing the shaft and mounted for movement along the way surfaces, means providing a cam track on the frame extending parallel to the path of movement of the carriage, an arm on the carriage, a set of frictionally surfaced idler rollers for frictionally engaging the drive shaft, said rollers being journaled in the carriage for rotation about axes lying in planes substantially parallel to the axis of the drive shaft, means for mounting the roller shafts in the carriage for skewing movement in their respective planes, and linkage for simultaneously skewing the roller shafts in one of two opposite directions from a neutral position in which the roller shafts are parallel to the drive shaft, the linkage including a cam follower coupled to the cam track, the cam track being so formed that the roller shafts are moved to a first skewed position in which the carriage is propelled along the shaft in one direction and a second oppositely skewed position in which the carriage is subsequently propelled along the drive shaft in the opposite direction.

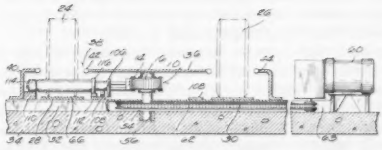
3,861,323
CONVEYOR SYSTEMS
John Turner, Stevenage, England, assignor to Geo. W. King Limited, Stevenage, Hertfordshire, England
Filed Jan. 31, 1973, Ser. No. 328,356
Claims priority, application Great Britain, Nov. 30, 1972, 55451/72
Int. Cl. B61b *3/00*
U.S. Cl. 104—172 S **9 Claims**

1. In a power-and-free conveyor system, a combination comprising a load trolley track, a load trolley mounted in said track for movement therealong, a power chain extending along said track at a spacing therefrom, pusher dogs on said chain, a first element below said track, and a second element above said track, said load trolley comprising a body, a driving dog mounted on said body so as to be movable between an operative position in which it is engageable by one of said pusher dogs and an inoperative position in which it is not so engageable, guide means mounted on the body for guiding movement of the trolley along said track, and an operating member movably mounted on the body and including a first part connected to the driving dog to move the dog, a second part disposed below said track and displaceable, by contact



with said first element, to move said operating member to move the driving dog, and a third part separate from said driving dog disposed above and displaceable, by contact with said second element, to move said operating member to move the driving dog.

3,861,324
CONVEYOR ASSEMBLY
Richard J. Shelstad, 4104 W. Haven Ave., Mequon, Wis. 53092
Filed May 21, 1973, Ser. No. 362,527
Int. Cl. B65g *17/38*
U.S. Cl. 104—172 B **12 Claims**



1. A conveyor assembly for moving a vehicle along a predetermined travel path comprising:

a conveyor means,

means for driving said conveyor means through a continuous path, a portion of the conveyor means path being generally parallel to said travel path;

at least one carriage carried by said conveyor means,

a puller unit carrying a generally horizontally extending wheel engaging member for engaging the rear portion of one of the vehicle wheels and pulling the vehicle forwardly along said travel path when said conveyor means is being driven;

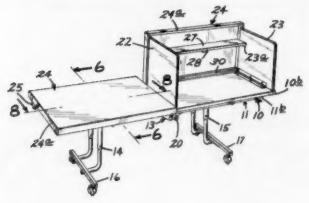
means pivotally mounting said puller unit on said carriage for pivotal movement of said puller unit relative to said carriage, about both a generally horizontal axis and a generally vertical axis, between an extended position where said wheel engaging member extends generally perpendicular to said portion of said conveyor means path for engaging a vehicle wheel and a retracted position where said said wheel engaging member is remotely located from the vehicle wheel and extends generally parallel to said portion of said conveyor means path; and

means on said carriage for releasably locking said puller unit in said extended position, said locking means being operable to release said puller unit and permit said puller unit to be moved toward said retracted position when a lifting force is applied on said wheel engaging member.

3,861,325
CONVERTIBLE FOLDING TABLE-CARREL UNIT

Richard C. Bue, and Kermit H. Wilson, both of Minneapolis, Mich., assignors to Sico Incorporated, Minneapolis, Minn.

Continuation of Ser. No. 267,064, June 28, 1973, abandoned. This application Aug. 13, 1973, Ser. No. 387,647
Int. Cl. A47b *85/00*
U.S. Cl. 108—13 1 Claim

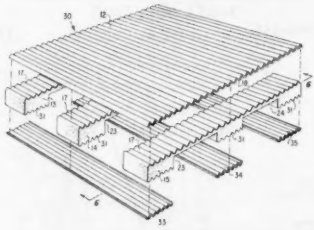


1. A convertible table-carrel unit comprising:
a. a top section having a back edge and opposite end edges;
b. base means for supporting said top section in a generally horizontal plane;
c. a pair of side walls having inner and outer surfaces, said side walls being oppositely hinged to said top section along lines adjacent and parallel to said end edges for upward and outward pivotal movement from inward, closed storage positions, folded downwardly with said inner surfaces against and parallel to said top section, to open parallel carrel forming positions perpendicular to said top surface along the ends thereof;
d. a back wall member pivotally connected to said top section for movement between an open, carrel-forming position in which it is vertically disposed along said back edge of and extends partly below said top section, and a closed, table-forming position in which it overlies the side walls in their inwardly and downwardly folded storage positions;
e. a peripheral frame secured to the edges of said back wall member, which in the closed position of the back wall member extends downwardly to hide the edges of the side walls and top section, the opposite ends of said peripheral frame providing stop members having inner surfaces thereon and extending forwardly from said back wall member in the open position thereof, the distance between the inner surfaces of said stop members being the same as the distance between the outer surfaces of said side walls in the open positions thereof so that in the open position of said back wall member said stop members limit said upward and outward movement of said side walls;
f. shelf means hinged longitudinally to said back wall member for pivotal movement between a closed position parallel thereto and an open position extending horizontally forward from said back wall member in the open position thereof, between said side walls, the length of said shelf means being the same as the distance between the inner surfaces of said side walls in their open positions, whereby said side walls are gripped between said stop members and the ends of said shelf means in the open position of said back wall member, said side walls, and said shelf means;
g. and means carried by said side walls on the inner surfaces thereof for limiting the forward pivotal movement of said shelf means.

3,861,326
LIGHTWEIGHT CORRUGATED PALLET

Dwight C. Brown, 5712 N. 20th St., Arlington, Va. 22205

Continuation-in-part of Ser. No. 2,774, Jan. 14, 1970, abandoned. This application Sept. 21, 1971, Ser. No. 182,508
Int. Cl. B65d *19/00*
U.S. Cl. 108—51 5 Claims

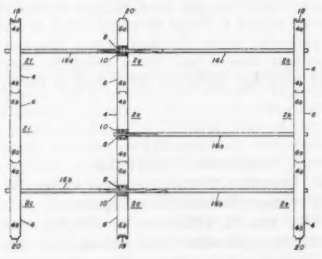


1. A four-way entry pallet comprising:
a. at least one corrugated upper deck member having a top side and an underside;
b. rigid plastic foam filler filling in at least a portion of each of the flutes of said top side corrugations to provide added strength and rigidity to said upper deck;
c. A plurality of spaced rigid plastic support members adhesively fastened to the underside corrugations of said upper deck, each of said supports having at least the top surface corrugated to mate with the respective corrugations of said underside corrugations of said upper deck;
d. each of said plastic supports being elongated members having an upper portion extending the length thereof, leg portions depending from said elongated upper portion spaced apart to form slots between said depending legs to permit entry of prongs of a forklift truck therethrough.

3,861,327
BOOKCASE SUPPORT

P. Kevin Silson, 5641 Woodmont St., Pittsburgh, Pa. 15217

Filed July 26, 1973, Ser. No. 382,894
Int. Cl. A47b *47/04*
U.S. Cl. 108—91 2 Claims



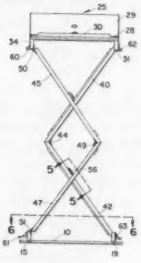
1. An invertible, stackable shelf support comprising:
an H-shaped vertical support member having
a. first and second vertical posts of predetermined height, and upper and lower cross bars interconnecting said posts,
said cross bars being a predetermined distance apart and defining a space therebetween,
said vertical posts having recesses therein complementary with said space,
said space and said recess forming a continuous slot at a predetermined height less than half the predetermined height of said vertical posts so that upon inser-

tion of a shelf through said slot said shelf is supported by said lower cross bar and by said vertical posts; and

b. first matable portions at the upper end of the first vertical post and the lower end of the second vertical post, and

second matable portions at the lower end of the first vertical post and the upper end of the second vertical post sized and shaped to fit first matable portions on a like support.

3,861,328
COLLAPSIBLE PODIUM STAND
John M. Lawless, 1531 Maple Ln., Moline, Ill. 61265
Filed Jan. 31, 1973, Ser. No. 328,269
Int. Cl. A47b *19/00*
U.S. Cl. 108—115 **7 Claims**



1. A podium stand comprising: a base with opposite, transversely spaced side edges and fore-and-aft spaced edges; a paper-supporting plate having transversely spaced opposite sides; a collapsible support extending between the base and plate comprising a first set of upper and lower links hinged together at lower and upper ends respectively with the upper of said links being hinged to and adjacent one side edge of the plate and extending therefrom downwardly and toward the opposite side to join with the adjoining upper end of the lower of the links, and the lower of the links being hinged at the base adjacent the one side of the base and extending upwardly and inwardly to its upper end, and a second set of upper and lower links hinged together at lower and upper ends respectively with the upper of the second set of links being hinged to and adjacent the other side edge of the plate and extending downwardly and transversely toward the opposite side edge to join with the adjoining upper end of the lower of said second set of links, the latter being hinged at the base adjacent the opposite side and extending upwardly and inwardly to its upper end, and the upper link of the first and second sets and the lower links of the first and second sets crossing one another; notches in the links and facing edges thereof for receiving the adjacent link to interlock the links in a fixed relation to one another; and means associated with at least one of the hinges on the base and said plate for permitting relative fore-and-aft movement between the link sets whereby the links may be moved to and from the fixed relation with the respective adjacent links.

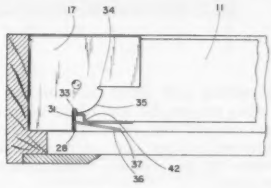
3,861,329
LOCKABLE FURNITURE LEG
Francis H. Kitchen, Sr., Lock Haven, Pa., assignor to Philip H. Wilkie, Rushville, Ind., a part interest
Filed June 25, 1973, Ser. No. 373,392
Int. Cl. A47b *3/00*
U.S. Cl. 108—125 **4 Claims**

1. A device for pivotally mounting a furniture leg to a furniture piece comprising:

a first frame fixedly securable to said piece of furniture, said first frame including a first stop and a second stop, said first frame includes a pair of spaced apart and parallel walls connected together each of which includes a first notch forming said first stop and a second notch forming said second stop and each further include a cam surface extending between said first notch and said second notch; and,

a second frame pivotally mounted to said first frame and constructed to fixedly receive said table leg, said second frame being pivotable from a first position locating said leg in an erected position to a second position locating said leg in a retracted position adjacent said piece of furniture, said second frame includes a pair of opposed side walls mounted to a bottom wall;

a locking wall slidably mounted to said second frame and being slidable against said first stop to lock said second frame in said first position and slidable against said second stop to lock said second frame in said second position, said locking wall includes a pair of opposite ears slidable along said cam surface and into and out of said first notch and said second notch of each of said parallel walls;



lever means engaged with said locking wall operable to slide said locking wall to and from said first stop and said second stop; and,

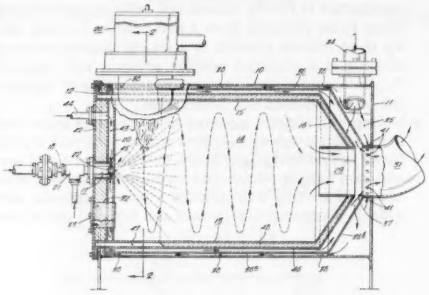
spring means connected to said locking wall and normally urging said locking wall against a stop but yieldable to allow said locking wall to be moved therefrom by said lever means, said spring means includes a helical spring with one end attached to said second frame and an opposite end attached to said locking wall, said locking wall is held between said bottom wall and said helical spring;

a pair of spaced apart guide walls fixedly mounted to said bottom wall on a side opposite from said opposed side walls, said guide walls having a pair of parallel slots slidably receiving said locking wall secured in said slots by said helical spring, said slots being alignable with each notch in said parallel walls of said first frame when said second frame is pivoted to said first position and to said second position.

3,861,330
INCINERATOR FOR AQUEOUS WASTE MATERIAL
Joseph J. Santoleri, Berwyn, Pa., assignor to The Trane Co., La Crosse, Wis.
Filed Mar. 13, 1974, Ser. No. 450,862
Int. Cl. F23g *5/12*
U.S. Cl. 110—7 S **10 Claims**

1. Apparatus for incinerating aqueous waste material comprising: a generally cylindrical incineration chamber having spaced end walls and an annular side wall, a discharge opening at one end of said end walls, said discharge opening leading to a stack for conveying away gaseous products of combustion from said incineration chamber, injection means centrally of the other of said end walls to inject a stream of said aqueous waste material into said incineration chamber in a direction toward said one end wall, said injection means including means to atomize said stream of aqueous waste material as it enters said incineration chamber and spray the same outwardly toward said annular wall, burner means having a combustion chamber therein and operable to burn a fuel and discharge at a high velocity a hot gaseous stream of products

of substantially complete combustion, said burner means mounted adjacent said incineration chamber to discharge said high velocity hot gaseous stream of products of substantially complete combustion tangentially into said incineration chamber at a location adjacent said other end wall so that said gaseous stream encircles the atomized waste material and



follows a swirling path about the atomized aqueous waste material along the annular wall of the incineration chamber toward said one end wall, an outer jacket about said annular wall, and means between said outer jacket and said annular wall to control the temperature of said annular wall and cool said outer jacket.

3,861,331

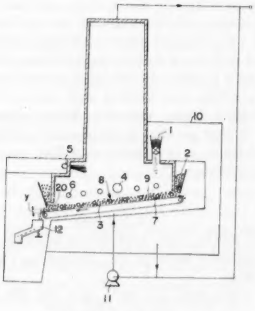
MOVING BOTTOM INCINERATOR

Shigeru Saitoh; Tetsuya Watanabe, and Noboru Suzuki, all of Fukushima-ken, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 20, 1973, Ser. No. 381,356

Int. Cl. F23g 5/00

U.S. Cl. 110—8 R **11 Claims**



1. An incineration furnace comprising:

a housing;

means constituting a movable bottom portion of said housing;

means for depositing a support material selected from pebbles and crushed rock onto said movable bottom portion to form a layer thereon;

means for moving said bottom portion and said layer of support material transversely along said housing into a rubbish or waste combustion stage and through an outlet in said housing;

means for introducing rubbish or waste onto the top of said layer prior to said combustion stage;

means for burning said rubbish or waste within said housing to produce an incombustible residue; and

means for closing off space above said layer at said outlet so as to obstruct air from entering the housing through said outlet while permitting withdrawal of said support material together with said incombustible residue therefrom.

3,861,332

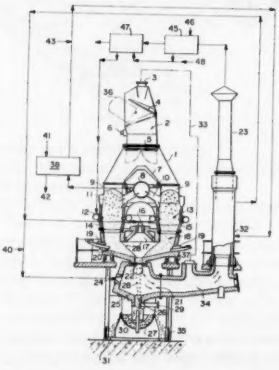
INCINERATOR FOR UNSEGREGATED REFUSE

Tokio Itasaka, Higashikurume, Japan, assignor to Ebara Infilco Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 279,557, Aug. 10, 1972, abandoned. This application Nov. 26, 1973, Ser. No. 419,007

Int. Cl. F23g 5/12

U.S. Cl. 110—8 C **14 Claims**



1. An incinerator for the treatment of unsegregated refuse containing organic matter, comprising

a. an injecting chamber for refuse,

b. a rotary distributor at the bottom of said injecting chamber for even distribution of said refuse,

c. an annular drying chamber for drying the refuse received from said rotary distributor,

d. an annular dry distilling chamber for pretreating, heat cracking and dry distilling the refuse from the annular drying chamber,

e. an annular oxidizing chamber including blow nozzle means for introducing a gasifying agent containing one-third to one-fourth of the quantity of air sufficient for complete combustion of said refuse,

f. these annular chambers communicating in sequential arrangement from top downwardly so that the gas generated in these chambers rises upwardly,

g. a gas duct having a gas collecting branch communicating with said annular drying chamber to collect and lead out from said annular chambers gases generated within same, said generated gases including corrosive and toxic components,

h. a residue reservoir communicating with said annular oxidizing chamber and including a flame chamber having a downwardly directed, axially located first burner therein,

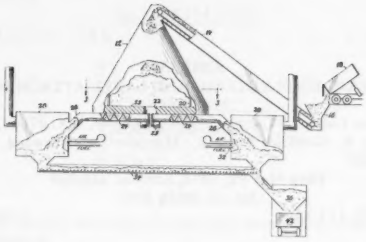
i. a secondary incinerating chamber below said residue reservoir and having a second burner therein,

j. a port connecting the bottom of said residue reservoir with said secondary incinerating chamber,

k. a water cooling chamber communicating with the bottom of said secondary incinerating chamber,

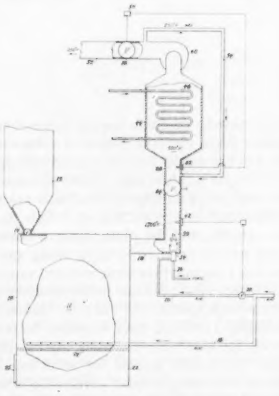
l. and further ducting connecting said gas duct with said first burner and said second burner, whereby, in use, said generated gases are collected by said gas duct and utilized as the heat source for said flame chamber and said secondary incinerating chamber.

3,861,333
WASTE PROCESSING SYSTEM
Eugene D. Krumm, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed Dec. 12, 1973, Ser. No. 424,245
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **9 Claims**



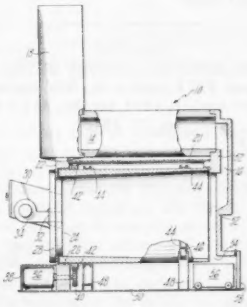
1. Apparatus for the continuous processing of waste material comprising in combination a central storage bin for collecting waste material therein, means for loading a quantity of waste material into said storage bin, a plurality of independent waste processing modules positioned about the periphery of said storage bin, means that concentrates the waste material inward at the central portion of the storage bin, and conveying means moving the waste material from the storage bin outward to each of said modules.

3,861,334
WASTE HEAT RECOVERY
Richard F. Stockman, Friendship, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed Apr. 5, 1974, Ser. No. 458,275
Int. Cl. F23g *5/12*
U.S. Cl. 110—10 **9 Claims**



1. Apparatus for the incineration of organic material including a primary combustion chamber having an inlet for waste material and an outlet for the exhaust of hot gases therefrom, a waste heat boiler having an inlet duct for hot gas and an outlet duct for cooled gas, a main duct connecting the outlet of the primary combustion chamber with the inlet duct of the waste heat boiler, a source of heat exchange fluid, means directing the heat exchange fluid through the waste heat boiler in heat exchange relation with the hot gas exhausting from the primary combustion chamber, an inlet port for recirculation gas located in the main duct in advance of the waste heat boiler, an outlet port for recirculation gas located in the outlet duct of the waste heat boiler, a recirculation duct connecting the inlet port to the outlet port, and means for moving cooled gas exhausting from the outlet port, and neons for moving cooled gas exhausting from the outlet duct of the heat boiler through the recirculation duct to the main duct to mix with the hot exhaust gas from the incinerator to lower the temperature thereof before it is directed through the waste heat boiler.

3,861,335
INCINERATION SYSTEM
Zygmunt J. Przewalski, Windsor, Conn., assignor to Progressive Trade Corporation, Glastonbury, Conn.
Filed Aug. 20, 1973, Ser. No. 389,980
Int. Cl. F23g *5/06*
U.S. Cl. 110—14 **9 Claims**



1. In an incinerator unit, a rotary incinerating chamber, a burner for directing flame into said chamber, feed means at one end of the chamber and an exhaust conduit at the opposite end of said chamber for removing combustion gases therefrom, said combustion chamber including at least one chamber section provided with a generally cylindrical exterior surface and a frustoconical interior surface with said one end being the smaller diameter end thereof, said chamber being mounted for rotation about a horizontal axis of rotation for imparting abrasive tumbling movement to waste material feed to said one end by said feed means, said burner being mounted at said one end for initiating immediate incineration of said waste material, said unit including means at said opposite end for removing solid incinerated material therefrom.

3,861,336
GARBAGE INCINERATOR
Shinzaburo Koyanagi, 13-11, Hatsudai 2-chome, Shibuyaku; Setsuko Sato, 54-1, Higashinakano 1-chome, Nakanoku, Tokyo, and Takasuke Koyanagi, 13-11, Hatsudai 2-chome, Shibuyaku, all of Tokyo, Japan
Filed Nov. 7, 1973, Ser. No. 413,610
Int. Cl. F23g *5/06*
U.S. Cl. 110—14 **4 Claims**

1. A combination garbage incinerator and hot water heater comprising:

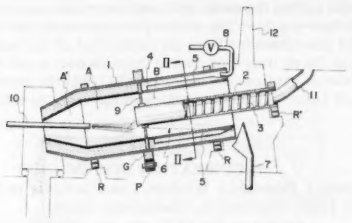
a cylindrical body defining a combination chamber;

a preheating cylinder extending axially into one end of said combustion chamber but short of the opposite end thereof for delivering garbage to said combustion chamber;

means for rotating said cylindrical body;

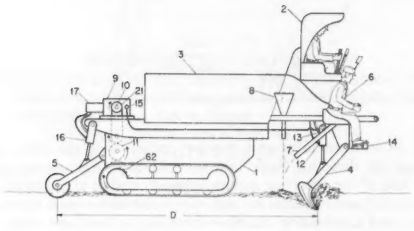
a burner extending into the opposite end of said combustion chamber at an angle with respect to the axis thereof and positioned to direct a flame at the lower edge of said preheating cylinder whereby the flame from said burner

is directed to a comparatively thin layer of garbage being discharged from said preheating tube, and



a water jecket disposed about at least a portion of said combustion chamber for receiving cold water and delivering heated water.

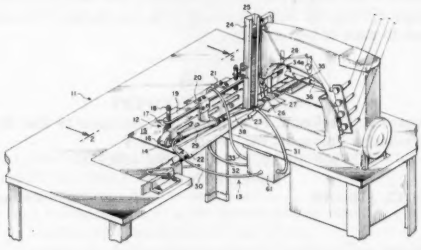
3,861,337
MECHANICAL MEMORY DEVICE
Daniel Thompson, 936 Kumukoa St., Hilo, Hawaii 96720
Filed Apr. 15, 1974, Ser. No. 461,170
Int. Cl. A01c
U.S. Cl. 111—1 **20 Claims**



1. A mechanical memory device for storing an input signal for transmittal after a required distance L has been traveled comprising:

a. a signal storage device carrier providing a supporting means thereon for a multitude of signal storage devices;
b. a multitude of movable signal storage devices each of which is supported on the carrier for alternately setting in one of two positions, operating and non-operating;
c. a signal sensor carrier;
d. a signal sensor for transmitting the stored signal;
e. means to cause relative motion between the signal storage device carrier and the signal sensor carrier such that the signal sensor passes each of the signal storage devices in operating relationship therewith;
f. an input signal control means;
g. an actuator for moving one of the signal storage devices into operating position;
h. a connection between the input signal control means and the actuator so that the actuator will move one of the signal storage devices into operating position in response to the input signal control means;
i. a means fastening the actuator to the signal sensor carrier on the line of travel of the signal storage devices for actuation thereof;
j. a means fastening the signal sensor to the signal sensor carrier at a distance L on the line of travel of the signal storage devices and in operating relationship therewith so that the signal sensor will transmit the stored signal after a signal storage device in operating position has traveled the distance L;
k. a signal storage device retractor for returning each signal storage device to non-operating position; and
l. a means attaching the retractor to the signal sensor carrier in the line of travel of the signal storage devices such that each signal storage device will be returned to non-operating position after passing the signal sensor and before passing the signal sensor and before passing the actuator.

3,861,338
FABRIC EDGE-ROLLING AND LABEL-ATTACHING MACHINE
William Galya, 29 Carpenter Ave., Brewster, N.Y. 07648, and Jack E. Shuffield, Route 2 - Merriden Dr., Norwood, N.J. 10509
Filed May 31, 1974, Ser. No. 475,038
Int. Cl. D05b *3/12*
U.S. Cl. 112—104 **9 Claims**

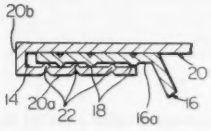


1. An industrial sewing machine device comprising: a horizontally elongated plate element having a substantially flat upper face and a substantially lineally extending edge having fixedly adhered thereto a fabric-edge folder structure shaped for folding over and under an edge of the fabric upon itself as the fabric is advanced in a direction in which the lineally extending edge extends, and the plate element having a needle-sewing space extending therethrough along said lineally extending edge; a sewing machine structure and support structure; a revolving-track fabric-presser means including spaced-apart revolvable wheels spaced apart in a horizontal direction and further including a toothed track mounted on teeth of the revolvable wheels for revolving the track alternately around the spaced-apart revolvable wheels for revolving the track alternately around the spaced-apart revolvable wheels such that fabric pressed therebeneath is pulled-along by frictional engagement, and further including structure for mounting on the support structure including springs biasing downwardly revolvably the revolving-track fabric-presser means toward said substantially flat upper face; a label-depositing means for depositing a label on fabric substantially concurrently with the seaming of the edge of the fabric by the fabric-edge folder structure; and driving means connected operatively to one of said wheels for driving said revolving-track fabric-presser means forwardly on a lower surface thereof adjacent the plate element flat upper face.

3,861,339
METHOD OF JOINING THE EDGE PORTIONS OF TWO SHEETS

Hiroyuki Aida; Norihiro Tsuneishi; Hideo Takizawa, and Yoshiyuki Miyabayashi, all of Tokyo, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jan. 29, 1974, Ser. No. 437,714
Claims priority, application Japan, Jan. 31, 1973, 48-13525[U]
Int. Cl. B21d *51/00*
U.S. Cl. 113—116 C 2 Claims

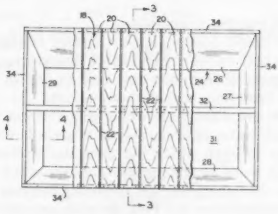


1. A method of joining two sheets at their edges, comprising the steps of:
   a. forming a plurality of substantially parallel ribs on a surface of the edge portion of one sheet;
   b. forming a plurality of substantially parallel ribs on a surface of the edge portion of the other sheet;
   c. placing the sheets together with one of the edge portions extending beyond the other edge portion; and
   d. tightly folding the edge portion extending beyond the other edge portion back over the other edge portion so that the surfaces of the sheets having the ribs formed thereon engage with each other and the ribs of the one sheet are spaced at least at portions thereof from the ribs of the other sheet.

3,861,340
FLOATING DOCK STRUCTURE

Jerry L. Clingenpeel, Rt. 3, Box 2038-31A, Port Richey, Fla. 33568

Filed Feb. 22, 1973, Ser. No. 334,580
Int. Cl. B63b *35/34*
U.S. Cl. 114—.5 F 8 Claims

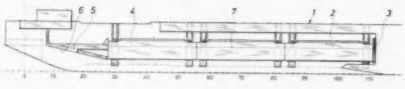


1. A floating marine structure of the type used as a dock or the like, said structure comprising: a deck, float means connected in supporting relation to said deck, said float means comprising a core of resinous material having a specific gravity less than water, said float means further comprising shell means at least partially surrounding said core, said shell means including at least one layer of fiberglass material positioned contiguous to the outer surface of said core and substantially defining the cross-sectional configuration thereof, the length of said core disposed into a substantially closed configuration, a space disposed on the interior of said core and defined by the closed configuration of said core such that the length of said core comprises the outer peripheral boundaries of said space, said core comprising a plurality of float elements integrally connected to define a closed configuration of predetermined shape; at least one of said float elements disposed along the outer peripheral edge of said deck and having a thickness substantially greater than the thickness of another of said plurality of float elements disposed in opposite relation thereto relative to said deck; whereby said structure may be free floating and said float means is substantially protected from the surrounding environment by said one layer of fiberglass material.

3,861,341
VESSEL WITH A WELL FOR CARGO BARGES

Per Holst Sorensen, Frederikshavn, Denmark, assignor to Frederikshavn Vaerfta & TordokaA/S, Frederikshavn, Denmark

Filed Aug. 16, 1973, Ser. No. 388,966
Claims priority, application Denmark, Aug. 16, 1972, 4046/72
Int. Cl. B63b *35/28*
U.S. Cl. 114—43.5 4 Claims

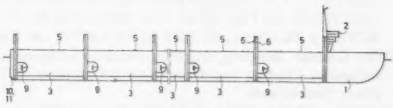


1. A vessel of the type in whose hull there is formed a lengthwise well open in the stern for receiving a train of cargo barges floating on their load water line, in which well there are provided vertically adjustable coupling means adapted to engage with coupling means on the barges, and securing means adapted to secure the coupling means to the hull of the ship, where said coupling means are mounted on vertical columns mounted to be vertically slidable in vertical guides provided in the wall of the well, each column being connected to an actuating mechanism for raising and lowering the column, the lower end of which carries a coupling means, such as an up-standing pin adapted when raising the column to become engaged with a coupling means, such as an opening, in the barge, the upper end of which column has a coupling means which by means of an actuating mechanism is engageable with a coupling means on the barge to apply a downward and outward pressure thereto, whereby the barge is urged against the lower coupling means of the column and away from the well wall.

3,861,342
LARGE-CAPACITY TRANSPORT SHIP

Lothar Stahl, Niederasdorf/Wehbach, Germany, assignor to Arn. Jung Lokomotivfabrik GmbH, Jungenthal bei Kirchen a.d. Sieg, Germany

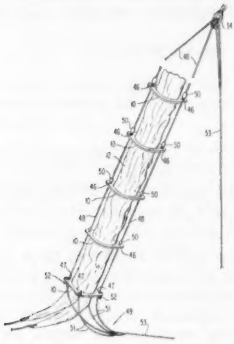
Filed Mar. 13, 1973, Ser. No. 340,684
Int. Cl. B63b *3/08*
U.S. Cl. 114—77 R 13 Claims



1. A large capacity transport ship, comprising a bow and individual but similar ship sections, said bow and ship sections being fixedly connected to one another in series, said ship sections each comprising two floating members which are connected at least at their ends, said two floating members forming the sidewalls of one said ship section, the space defined by the floating members being open freely to the water which supports the ship, each ship section additionally comprising a pair of transversely disposed rings at and connected to the ends of said floating sidewall members for locating said

floating sidewall members in fixed relative relation to define a load receiving room therebetween, said rings being disposed between and effecting the fixed connection between adjacent ship sections.

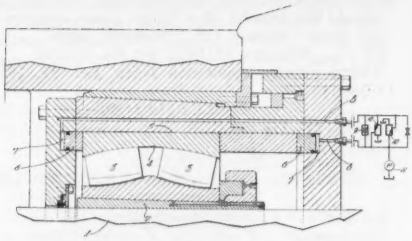
3,861,343
DEVICE FOR LAUNCHING AND DOUSING LIGHT SAILS SUCH AS SPINNAKERS
Jack W. Fretwell, Jr., Millwood, Va. 22646
Filed Jan. 3, 1974, Ser. No. 430,562
Int. Cl. B63h *9/10*
U.S. Cl. 114—104 **10 Claims**



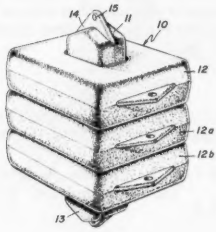
1. A device for launching and dousing a light sail connected to the mast of a sailing vessel comprising a plurality of at least two rings spaced from each other along the length of said sail and encircling said sail in furled condition, each said ring being of a size which, when positioned on the sail in the furled condition, provides tight but upwardly slideable engagement with the sail, the lowermost ring engaging the lower portions of the sail, the uppermost ring engaging the upper portions of the sail and any intermediate ring or rings engaging intermediate portions of the sail when in the furled condition to retain said sail in the furled condition; means for raising the lowermost ring into engagement with the next ring above it to raise said next ring to engage the second ring above it and successively to raise it and all rings to slide said rings upwardly along said sail to disengage all rings from the sail and thereby launch the sail; and means for lowering the rings beginning with the lowermost ring in succession into sliding encircling engagement with said sail forcing same into furled condition and positioning said rings in the aforementioned spaced apart positions to retain said sail in furled condition.

3,861,344
METHOD AND MEANS FOR PREVENTING WEAR BETWEEN OUTER RING AND BEARING SEAT OF ROLLER BEARING IN THE STERN-POST OF SHIPS
Folke Gunnar Bergling, Partille, Sweden, assignor to SKF Industrial Trading and Development Company, B.V., Jutphass, Netherlands
Filed May 16, 1973, Ser. No. 360,901
Claims priority, application Sweden, May 25, 1972, 6868/72
Int. Cl. B63h *25/34*
U.S. Cl. 114—169 **5 Claims**

1. A system for mounting a bearing assembly in the stern-post of ships to minimize wear between the outer ring of the bearing assembly and a bearing seat and wherein the inner ring is mounted on a propeller shaft comprising means defining at least two axially spaced pressure chambers adjacent opposite axial ends of said outer ring, hydraulically operable piston means in each of said chambers, means for pressurizing said chambers, means in said conduit means limiting fluid flow between said chambers and operable to permit fluid flow between said chambers to balance the pressure in said chambers when the pressure in either chamber exceeds a predetermined level.



3,861,345
BOAT BUMPER
Evan B. Hull, Northboro, Mass., assignor to Multiform, Inc., Worcester, Mass.
Continuation of Ser. No. 161,710, July 12, 1971, abandoned. This application July 2, 1973, Ser. No. 375,327
Int. Cl. B63b *59/02*
U.S. Cl. 114—219 **8 Claims**



1. A boat bumper, comprising

a. an elongated, hollow element formed of elastomer, possessing both bouyancy and shock absorbency, adapted to be suspended from one end, and having an integral enlarged head only at the other end, and

b. at least one energy-absorbing ring element formed of a resilient, water-impermeable substance having a central passage through which the elongated element extends, the ring being capable of passing over all of the element except the enlarged head, and being bouyant and shaped to be suitable as a life ring, the said one end of the elongated element and an outer part of the ring element being provided with an apertured ear for suspension and use as a bumper, wherein the bumper can be easily transformed from a first, stored state in which the ring element is about the elongated element and the combination is usable as a bumper, to a second, separated state in which the elongated element and the ring element are usable separately as bumpers.

3,861,346
BOAT DOCKING TOOL
Florentino P. Pina, Waltham, Mass., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed June 4, 1973, Ser. No. 366,964
Int. Cl. B63b *21/04*
U.S. Cl. 114—230 **1 Claim**

1. A lightweight tool for assisting in the docking manuever of a boat, consisting of a pole, an ajustable mooring ring

detachably fixed to the distal end of the pole, said mooring ring fitted with an eye member for fastening to a mooring line, and notch means at the proximal end of the pole for frictionally gripping a line that is tied to the eye member of the mooring ring,

said mooring ring fixed to the pole so that movement of the mooring ring in the axial direction of the pole and away from the pole acts to free the mooring ring from the pole, while a force acting on the mooring ring in the axial direction of the pole towards the pole acts to retain the mooring ring fastened to the pole, such that

a flexible line tied to the eye member of the mooring ring, tightly drawn against the pole, and gripped by the notch

means at the proximal end of the pole maintains the mooring ring fastened to the pole,

permitting said mooring ring and line to be freed from the pole when the line is manually disengaged from the notch means, and the pole manually pulled away from the mooring ring,

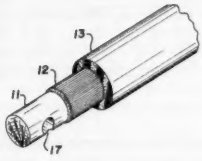
said adjustable mooring ring formed of a length of wire in the shape of a loop held in place by a bracket fitted with two generally parallel holes, with each end of the length of wire passing through one of the holes of the bracket, together with fastening means to hold each end of the loop in place in its respective bracket hole, one of said fastening means being releasable.

3,861,347

REINFORCED TOW HANDLE

Harlan B. Christenson, Spirit Lake, Iowa, assignor to Berkley & Company, Inc., Spirit Lake, Iowa

Filed May 29, 1973, Ser. No. 365,032
Int. Cl. B63b *21/56*
U.S. Cl. 115—6.1 **10 Claims**



1. Gripping handle means for a tow line and comprising:

a. an elongated generally rigid solid core member with a specific gravity of less than unity and with a relatively low bending modulus, said core member having a centrally disposed axis;

b. a single layer of glass cloth disposed about said core and bonded to the outer surface thereof, and a resilient sleeve disposed about and covering the outer surface of said glass cloth;

c. said glass cloth layer having a predominance of longitudinally disposed fibers extending generally parallel to said core axis; and

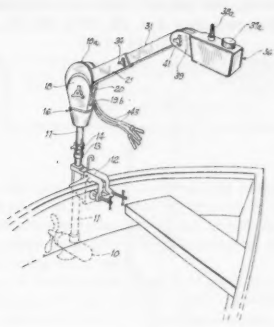
d. said composite gripping handle means having a specific gravity of less than unity.

3,861,348

CONTROL ASSEMBLY FOR ELECTRIC OUTBOARD TROLLING MOTOR

John C. Beierle, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Nov. 19, 1973, Ser. No. 417,138
Int. Cl. B63h *21/56*
U.S. Cl. 115—18 E **3 Claims**



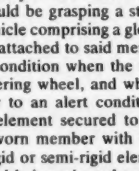
1. In an electric outboard motor including a rotatable tubular column adapted to be clamped to a boat and having a depending motor and propeller adapted to be driven by a source of electric power, the improvement which includes a control assembly comprising a first arm pivotally connected to said column for pivotal movement about an axis normal to the axis of the column, means for locking said first arm in a position of adjustment relative to said column, a second arm connected to said first arm and movable longitudinally relative to said first arm, means for locking said first and second arms in a position of adjustment, a control head containing electrical control components and pivotally connected to said second arm, and means for locking said head in a position of adjustment relative to said second arm.

3,861,349

OPERATOR ALERTING DEVICE

Cecil Conley, Rt. 1, Hinsdale, Ill. 60521

Filed Aug. 16, 1972, Ser. No. 280,958
Int. Cl. G08b *21/00*; B60g *9/00*
U.S. Cl. 116—114 R **2 Claims**



1. A hand-worn safety device for vehicle drivers at least one of whose hands should be grasping a steering wheel for safe operation of said vehicle comprising a glove-like or hand-worn member and means attached to said member for arousing the wearer to an alert condition when the wearer's gloved hand drops from said steering wheel, and wherein said means for arousing the wearer to an alert condition comprises a first rigid or semi-rigid element secured to the material of said glove-like or hand-worn member with at least one aperture therein, a second rigid or semi-rigid element suspended from said first element and being adapted to penetrate said glove-like or hand-worn member and prick the hand of said wearer

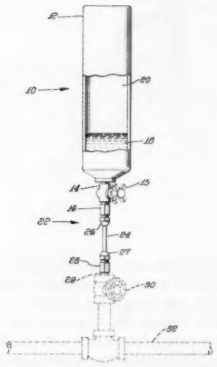
when the wearer's gloved hand falls and said second element strikes the thigh of said wearer.

3,861,350

WARNING SYSTEM AND DEVICE, AND MALODOROUS WARNING COMPOSITION OF MATTER AND PROCESS FOR ITS PREPARATION

Albert B. Selleck, 19310 Caladero St., Tarzana, Calif. 91356

Division of Ser. No. 165,537, July 23, 1971, Pat. No. 3,767,591. This application Apr. 20, 1973, Ser. No. 353,491
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 **11 Claims**



1. A warning system for introducing a malodorous composition of matter into a pressurized air breathing system of a facility to provide a warning odor to a person in case of danger, said pressurized air breathing system having a minimum pressure of about 150 pounds per square inch, comprising:

a high pressure container equipped with a valve means at one end;

connecting means connecting said valve means of the container to valve means of a pressurized air breathing system of a facility;

about 1 part by eight of a liquid malodorous substance inside said container;

from about 2 to about 6 parts by weight of a nonflammable solvent for said liquid malodorous substance, said solvent having a maximum vapor pressure of less than 40 pounds per square inch at sea level at a temperature of about 130° F., inside said container; and

from about .2 to about .4 parts by eight of an inert gas uner pressure inside said container, whereby a pressure of at least 200 pounds per square inch is produced inside said high pressure container over a temperature range of from about 10° to about 130° F.

3,861,351

APPARATUS FOR COATING AND STACKING PRINTED SHEETS

Willard R. Bonwit, Rydal, Pa.; Valdis Shaurins, Palisades Park, and Roger W. Young, Upper Montclair, both of N.J., assignors to John Dusenbery Co., Inc., Clifton, N.J.

Filed Dec. 6, 1973, Ser. No. 422,174
Int. Cl. B05c *1/02*
U.S. Cl. 118—6 **11 Claims**

1. Apparatus for coating and stacking printed sheets as they come from the delivery end of a sheet-fed press, which apparatus comprises,

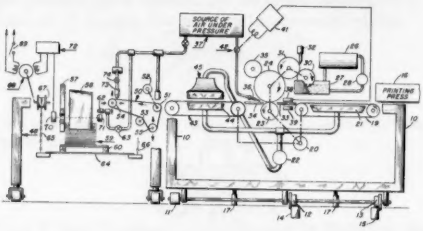
a. a coating cylinder adjustable in proximity to an impression cylinder,

b. a container containing a coating solution,

c. transfer means transferring solution from said container and spreading it evenly over the surface of said coating cylinder,

d. first power-driven vacuum belt means positioned to receive sheets directly from the press and feeding the leading edges of the sheets between the impression and coating cylinders,

e. second, power-driven vacuum belt means receiving sheets after they pass between the impression and coating cylinders,



f. drying means drying the coated sheets as they are transported by said second vacuum belt means,

g. inclined belt means receiving sheets from said second vacuum belt means,

h. a backstop,

i. means driving said inclined belt means at a speed to propell the sheets against the backstop, and

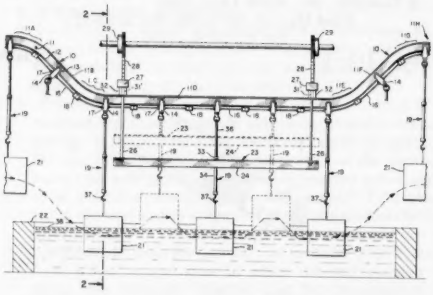
j. means stacking the sheets as they drop along the backstop.

3,861,352

AUTOMATIC GALVANIZING MACHINES

Thorvald F. Hammer, 95 Cherry Hill Rd., Broanford, Conn. 06405

Continuation-in-part of Ser. No. 299,757, Nov. 24, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 458,480
Int. Cl. B05c *3/09*
U.S. Cl. 118—425 **10 Claims**



1. Workpiece immersion treatment apparatus for hot dip galvanizing or like operations incorporating:

A. an elongated kettle containing an immersion bath,

B. an overhead rail conveyor having a low portion extending over the kettle connecting higher entrance ramp and exit ramp portions,

C. trolleys mounted for rolling movement spaced apart along the rail,

D. a vertically retractable pendant depending from each of the trolleys,

E. workpiece support means mounted at the lower end of each pendant at a level selected for workpiece immersion in the bath,

F. drive means propelling the spaced trolleys and pendants along a treatment path defined by the rail, and

G. pendant elevating means positioned to retract and extend said pendants beneath the low rail portion, producing successive immersion and withdrawal of bath-treated workpieces travelling the length of the kettle.

3,861,353

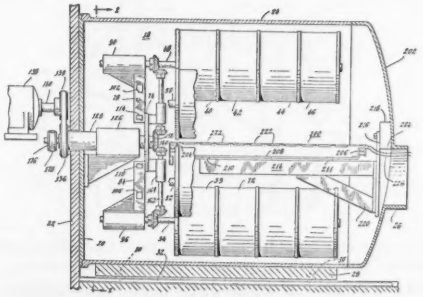
SYSTEM FOR VAPOR DEPOSITION OF THIN FILMS

Francis J. Erhart, and Harold H. Schroeder, both of Monroe, N.Y., assignors to Xerox Corp., Stamford, Conn.

Division of Ser. No. 400,593, Sept. 25, 1973, , which is a division of Ser. No. 244,374, April 17, 1972, abandoned. This application May 3, 1974, Ser. No. 466,575

Int. Cl. C23c *13/08*

U.S. Cl. 118—49.1 **8 Claims**



1. Apparatus for the vapor deposition of a layer of material on substrate bodies comprising:

a generally vertically orientated support table adapted for rotation about a horizontal axis;

means for rotating said support table;

a plurality of elongated horizontally orientated mandrels rotatably supported in an annular array on said support table;

means for rotating each of said mandrels about a longitudinal axis thereof;

each of said mandrels adapted for receiving, supporting, and rotating therewith a plurality of substrate bodies;

means for vaporizing a predetermined quantity of material which is to be deposited upon said substrate bodies; said vaporizing means comprising a planar array of crucible members including a plurality of elongated strips of crucibles extending substantially coextensively with the elongated mandrels and a plurality of relatively shorter strips of outrigger crucible members positioned near opposite ends of said enclosure; means to simultaneously activate said crucibles and

means providing an evacuated enclosure for said transported mandrels and the substrate bodies supported thereon.

3,861,354

ELECTROSTATIC IMAGE DEVELOPER

Eric P. Muntz, Pasadena, and Murray S. Welkowsky, Los Angeles, both of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed May 2, 1973, Ser. No. 356,502

Int. Cl. G03g *13/00*

U.S. Cl. 118—629 **4 Claims**

1. In a powder cloud developer having a developing chamber, means for producing a cloud of toner powder particles in the chamber at the start of a developing cycle, a conducting plate for supporting in the chamber a receptor sheet having an electrostatic image, an apertured image field plate mounted in the chamber adjacent the receptor sheet, a charge selection electrode mounted in the chamber with the particle cloud produced between the image field plate and electrode, and first voltage supply means for producing an electric field between the image field plate and electrode during the developing cycle for attracting particles of one polarity to the electrode and particles of the opposite polarity to the image field plate, with the charge on the sheet attracting the particles of opposite polarity through the plate apertures to the sheet,

the improvement comprising in combination:

means for providing an electric field between the image field plate and the conducting plate carrying the receptor sheet comprising second voltage supply means providing an output varying as a first function of time during the developing cycle; anad

means for moving said image field plate in a direction perpendicular to the receptor sheet providing a distance therebetween varying as a second function of time during the developing cycle, with said first and second functions related such that said second voltage supply output is increased as said distance is decreased and decreased as said distance is increased.

3,861,355

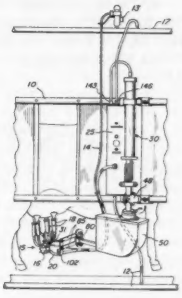
AUTOMATIC MILKER TAKE OFF ASSEMBLY

Kendall R. Johnson, and Arnold R. Fjermestad, both of Albert Lea, Minn., assignors to Universal Cooperatives, Inc., Albert Lea, Minn.

Filed Feb. 25, 1974, Ser. No. 445,467

Int. Cl. A01j *5/04*

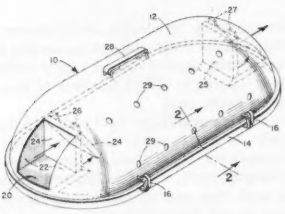
U.S. Cl. 119—14.08 **9 Claims**



1. A milker take off assembly comprising a milker having teat cups with a collecting bowl and a milk withdrawal line connected thereto, a source of vacuum pressure, a milk collecting line, three way valve means for connecting the milk withdrawal line to the milk collecting line in one position of the valve means, a mounting assembly for holding the milker in position of usage, said mounting assembly including a shaft portion with a holder portion journaled on the shaft portion for limited rotative movement, spring means for rotating the holder portion on the shaft portion, a pair of linkage means mounted in the holder portion and connected to and mounting the milker to move the milker about two axes of movement toward and away from the holder portion, actuator means mounted in the shaft portion and connected to the linkage means to pivot the linkage means, conduit means connecting the actuator means to the vacuum pressure source through

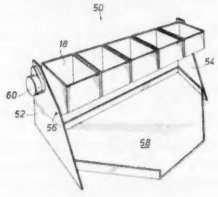
said valve means in another position of operation of the valve means, a flow sensor positioned in the milk collecting line leading from the valve means, and means responsive to the absence of flow through the sensor to energize the valve means to the other position and connect the actuator means of the mounting assembly to the vacuum source of pressure to pivot the linkage means and cause rotation of the holder portion on the shaft portion to move the milker out of a position of usage.

3,861,356
ANIMAL SHELTER
Helen C. Kulka, 200 Film Bldg., Cleveland, Ohio 44114
Filed Mar. 8, 1973, Ser. No. 339,372
Int. Cl. A01k *1/02*
U.S. Cl. 119—19 **10 Claims**



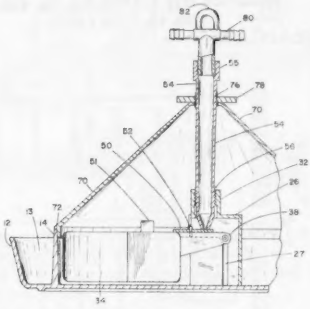
1. An animal shelter suitable for protecting the occupant from loud and/or sudden external noises, comprising a housing member in the form of a generally dome-shaped rigid structure having a solid integral outside surface layer, a layer of foamed material adjacent thereto, and an inside surface layer comprising an inner layer of a sound barrier material and a layer of acoustic fiberglass material adjacent thereto.

3,861,357
ANIMAL FEEDER
Arthur P. Ruth, P.O. Box 11037, Houston, Tex. 75016
Filed July 13, 1973, Ser. No. 378,954
Int. Cl. A01k *05/02*
U.S. Cl. 119—51.13 **3 Claims**



1. An animal feeder comprising:
a bin for receiving and storing animal feed therein, said bin including an open upper end and a bottom thereacross;
a stand;
a first shaft supported by said stand;
means connected to said bin and rotatably engaged with said shaft for pivotal movement of said bin from a generally upright position for receiving and storing feed and also for movement to a position dumping feed therefrom by gravity fall;
a second shaft parallel to said first shaft;
a cam lob projecting from said second shaft;
said second shaft being positioned relative to said first shaft such that said bin is held in a generally upright position by resting against said second shaft and said cam lob rotates against said bin to push it laterally from said second shaft and past a point where it tends to rotate of its own weight to a dumping position; and,
a motor operating at a specified rate connected to said second shaft to rotate said cam lob.

3,861,358
ANIMAL WATERING DEVICE
James P. Bowell, 494 Villaume Ave., South Saint Paul, Minn. 55075
Filed Oct. 25, 1973, Ser. No. 409,470
Int. Cl. A01k *07/02*
U.S. Cl. 119—79 **10 Claims**



1. An animal watering device comprising in combination:
a base having a first circumferential wall extending upward from the perimeter of said base and a second circumferential wall inside said first wall also extending upward from said base so as to form a circumferential watering trough between said first and second walls;
a compartment means extending over a portion of the area inside said second circumferential wall, said compartment means formed at least partly by partitions extending upward from said base, said portion of the area extending from proximate the second circumferential wall generally to the center of the area inside said second circumferential wall;
a water feed tube positioned generally along and concentric with an axis extending perpendicular from said center of the area inside said second circumferential wall, said tube adjustably fastened to said compartment means so as to be movable along said axis, and said tube adapted at its upper end to connect to a common water supply;
a float in said compartment means pivoted near the bottom of said water feed tube, said float having a sealing member thereon positioned to rise with the rising water level under said float into place against the bottom of said feed tube to regulate the flow of water into the compartment means; and
passageway means between said circumferential trough and said compartment means.

3,861,359
HOG SORTER GATE DEVICE
Robert Pals, R.R. No. 1, Teutopolis, Ill. 62467
Filed Jan. 9, 1974, Ser. No. 431,863
Int. Cl. A01k *29/00*
U.S. Cl. 119—155 **. Claim**

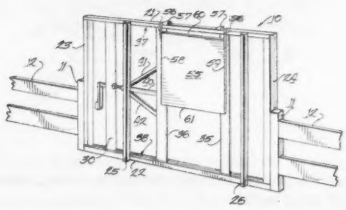
1. A hog sorter gate device intended for the sorting, classifying, and separating of hogs according to size and therefore according to weight, the device in combination comprising:
a rectangular frame having a horizontal top member, a horizontal bottom member, and opposed vertical side members, the frame top and bottom members each formed of identical channel members having a U-shaped

cross-section, said channels being disposed in confronting face-to-face relationship;

a fixed vertical side rail spaced inwardly from one of said side members and extending between said top and bottom members;

a movable vertically disposed side rail spaced inwardly from said opposite side member and disposed adjacent said fixed side rail and movable horizontally toward and away therefrom, said movable side rail having its opposite end portions in sliding engagement with said top and bottom channel members respectively for guided relationship therein;

a vertically extending fixed post disposed intermediate said movable side rail and said adjacent side member and having its opposite ends permanently secured to said top and bottom frame members respectively;



an opening extending diametrically through said fixed post approximately midway between said top and bottom members with said opening lying in the plane of said top and bottom members;

a tubular member disposed in axial alignment with said fixed post opening and having one end affixed to said movable side rail with the opposite end projecting outwardly therefrom and terminating a spaced distance from said fixed post;

a nut having a threaded bore disposed in axial alignment with said tubular member and permanently affixed thereto;

a threaded elongated cylindrical shaft member having a handle affixed to one end with the shaft extending through said fixed post opening and having its opposite end threadedly received in said nut, the threaded relationship between said shaft and said nut being substantially non-reversable such that the selected position of adjustment of said movable side rail will be maintained until altered by use of said handle even though hogs passing intermediate said fixed and movable side rail may exert high levels of force on said movable side rail;

the rotation of the shaft in either direction about its axis will effect movement of said movable side rail relative to said fixed side rail in opposite directions depending upon the direction of rotation of the shaft about its axis;

a graduated scale marked in inches disposed along a portion of said frame top member beginning adjacent said fixed side rail and extending in the direction of said movable side rail, and indicating the spacing in inches between said movable and fixed side rails;

a pointer member fixedly mounted on said movable side rail and overlapping a portion of said scale to indicate an exact measurement of the width of the opening defined between adjacent most surfaces of said movable and said fixed side rails;

a door member extending the full maximum width of the maximum width opening between said fixed and movable side rails and overlapping portions of said side rails along the door side edges;

a pair of horizontally spaced apart hook members mounted on said frame top member and projecting outwardly of the plane thereof;

rod members each having one end portion thereof pivotally attached to associated ones of said hook members with the opposite end portions thereof projecting outwardly therefrom and affixed to opposite side members of said door;

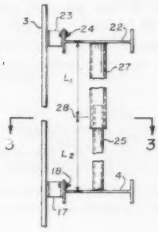
said door being swingable about said hook members between a vertical closed position engaging said side rails and an open position swung outwardly from said side rails thereby providing a one-way door swingable in a single direction only such that hogs of a size to pass between said side rails engage the bottom edge of said door to swing the same out of the way as the hogs pass therethrough with the door returning to said vertical closed position to prevent the hogs from passing in the opposite direction through the gate opening.

3,861,360

STEAM GENERATOR BUCKSTAY LEVELER SYSTEMS

John Mohr Shank, Jr., East Longmeadow, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 10, 1974, Ser. No. 459,761
Int. Cl. F22b *37/24*
U.S. Cl. 122—6 A **5 Claims**



1. Apparatus for maintaining level the buckstays of a steam generator having a vertically expanding furnace structure, said steam generator having a first buckstay at a lower elevation, a first support supporting said first buckstay from the furnace structure in a cantilever fashion; said steam generator also having a second buckstay at an upper elevation, and a second support supporting said second buckstay from the furnace structure in a cantilever fashion comprising: a first member rigidly fastened to said first buckstay and extending upwardly; an a second member rigidly fastened to said buckstay and extending downwardly and slidably and telescopingly engaging said first member, said telescopic engagement of said first and second members permitting transmission of horizontal force said first and second members at an intermediate elevation between said first and second buckstay elevation; said intermediate elevation being a vertical distance from said first and second supports in inverse proportion to the bending moment of said first and second buckstays around their respective supports.

3,861,361

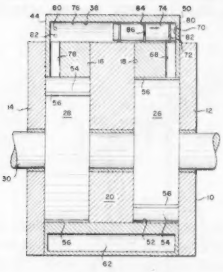
ROTARY ENGINE WITH PISTON SCAVENGED PRECOMBUSTION CHAMBERS

Edward D. Klomp, Mt. Clemens, and Rodney J. Tabaczynski, Birmingham, both of Mich., assignors to General Motors Corp., Detroit, Mich.

Filed Nov. 29, 1973, Ser. No. 420,219
Int. Cl. F02b *53/10*
U.S. Cl. 123—8.05 **3 Claims**

1. A rotary internal combustion engine comprising a housing including opposed end walls and intermediate walls in conjunction with peripheral walls defining an even number of rotor cavities, a rotor in each of said cavities, an exhaust system in said housing, a crankshaft, an eccentric on said crankshaft for each of said rotors, means supplying a main

relatively lean air fuel charge to each of said cavities, said rotor planetating relative to said crankshaft on said eccentrics as each rotates within its respective housing cavity compressing the main air fuel charge for combustion therein, an auxiliary chamber formed in said engine housing, a first throat passage in said housing connecting a first end of said auxiliary chamber with one of said rotor cavities, a second throat passage in said engine housing connecting a second end of said auxiliary chamber with another of said rotor cavities, a piston freely slidably positioned within said auxiliary chamber for reciprocal movement therein, said piston dividing said auxiliary chamber into first and second precombustion chambers, said rotors being phased relative to each other on said crankshaft creating a different pressure on each end of said piston



through said throat passages moving said piston expanding one of said precombustion chambers while compressing the other, means periodically and sequentially supplying a rich air fuel charge to said precombustion chambers while the corresponding rotor is compressing the lean air fuel charge in its rotor cavity, and means periodically and sequentially igniting the rich air fuel charge whereby the burning gases expand through the corresponding throat passage into the associated rotor cavity igniting the main air fuel charge while further rotation of the rotors changes the pressures in the precombustion chambers moving said piston toward an opposite end of said auxiliary chamber sweeping out the burned gases into a corresponding rotor cavity for discharge through said engine exhaust system.

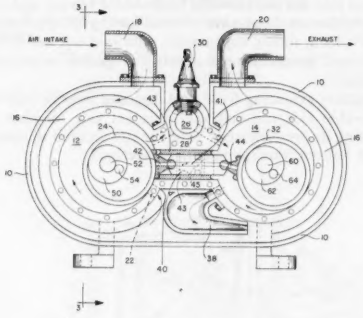
3,861,362

ROTARY INTERNAL COMBUSTION ENGINE, AND THE LIKE

Roger C. Kenyon, 5130 Sunnyslope Ave., Sherman Oaks, Calif. 91403

Filed July 11, 1973, Ser. No. 378,063
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.25 **7 Claims**

1. A rotary mechanism including: a casing defining a first annular cylinder; a first shaft extending coaxially with the central axis of said first annular cylinder and rotatably supported therein; a first disc-like member mounted on said shaft coaxially with the axis of rotation thereof and keyed thereto; a first pin coupled to said first disc-like member and extending along an axis spaced from and parallel to the axis of rotation of said first shaft; a first roller-like rotor rotatably mounted on said first pin in coaxial relationship therewith and positioned within said first cylinder for eccentric movement around said first cylinder in rolling contact with the inner peripheral surface thereof; and a slide member mounted in said casing and positioned radially with respect to said central axis of said first cylinder and engaging said rotor for biasing said rotor against



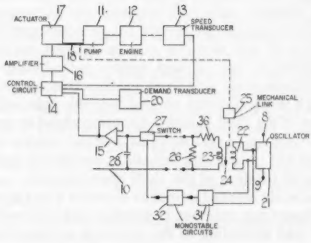
said inner surface of said first cylinder in sealing relationship with said inner surface.

3,861,363

CONTROL SYSTEMS FOR ENGINES

Malcolm Williams, Solihull; Geoffrey Albert Kenyon Brunt, Glastonbury, and Christopher Robin Jones, Alcester, all of England, assignors to C. A. V. Ltd., Birmingham, England

Filed Apr. 4, 1973, Ser. No. 347,701
Claims priority, application Great Britain, Apr. 4, 1972, 15366/72
Int. Cl. F02b *3/00;* **G01l** *9/00;* **F16c** *17/06*
U.S. Cl. 123—32 EA **12 Claims**



1. A control system for an engine comprising in combination an actuator for controlling the setting of a part associated with the engine, a control circuit coupled to the actuator to determine the position of said part, an oscillator, means deriving from said oscillator an a.c. signal having an amplitude dependent on the value of a system parameter, a switching device by way of which said a.c. signal is fed to a capacitor, the voltage across the capacitor providing an input to the control circuit, and means operable in synchronism with the oscillator for turning the switching device on at periods during the operation of the oscillator when said a.c. signal has stabilised.

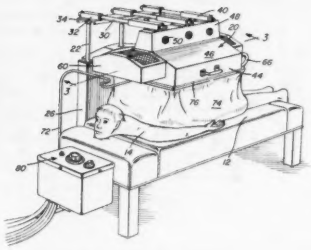
3,861,364
BODY CIRCULATION AND VAPOR HEAT TREATMENT DEVICE

Herman Greenfeld, P.O. Box 1644, Salisbury, Md. 21801

Continuation-in-part of Ser. No. 187,145, Oct. 6, 1971, abandoned, which is a continuation of Ser. No. 808,429, March 19, 1969, abandoned. This application Aug. 13, 1973, Ser. No. 387,653

Int. Cl. A61f *5/00*

U.S. Cl. 128—68.1 **6 Claims**



1. A body fluid circulation and vapor heat treating device comprising a horizontally elongated housing having a generally vertical peripheral wall provided with an open lower end for positioning above a portion of the body surface of a person receiving a heat treatment when oriented on a horizontal support surface, vapor heat producing means within said housing, and a flexible absorbent skirt mounted on said housing in depending relation thereto, said flexible skirt having a substantially vertically disposed peripheral wall defining a free hanging continuation of the peripheral wall of the housing and a flexible bottom panel forming a closure for the lower end of the skirt and bottom capable of flexing around the side surfaces of the body of a person receiving a heat treatment while the lower end of the housing is still substantially spaced from the body surface, said skirt and bottom panel being constructed of absorbent fabric.

3,861,365
MECHANISM FOR ADJUSTING AND MAINTAINING THE VALVE PLAY IN INTERNAL COMBUSTION ENGINES, ESPECIALLY IN MOTOR VEHICLE INTERNAL COMBUSTION ENGINES

Anton Zink, Fellbach, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Dec. 8, 1972, Ser. No. 313,278

Claims priority, application Germany, Dec. 8, 1971, 2160774

Int. Cl. F01l *1/18, 1/20*

U.S. Cl. 123—90.43 **38 Claims**

28. Valve play adjusting apparatus comprising:

a housing,

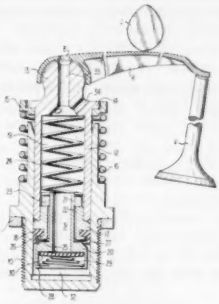
a first piston movably disposed in said housing and including rocker arm engaging means for engaging a valve rocker arm or movement therewith,

a second piston movably disposed in said housing,

a fluid reservoir space and a fluid pressure space communicating directly with respective oppositely facing pressure surfaces of said pistons such that said pistons are moved together in respective opposite direction dependent on forces exerted thereon by the rocker arm and on changes in the relative fluid pressures in said reservoir space and pressure space,

said first and second pistons being provided with respective abutment surface portions in facing relationship to one another,

and spacing means for maintaining said first and second pistons with said abutment surface portions spaced a predetermined distance from one another when the pressure difference between said reservoir space is below a certain value while permitting said first and second pistons to move toward one another until said abutment surface portions abuttingly engage one another whenever



the pressure difference is sufficiently above said certain value, wherein at least one of said abutment surface portions includes groove means for accommodating leakage of fluid between said abutment surface portions when in abutting engagement with one another.

3,861,366
AIR-FUEL MIXTURE SUPPLY CONTROL SYSTEM FOR USE WITH CARBURETORS FOR INTERNAL COMBUSTION ENGINES

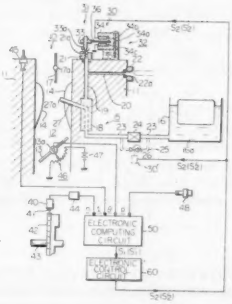
Kenji Masaki, Yokohama, and Shigeo Aono, Yokosuka, both of Japan, assignors to Nissan Motors Company, Limited, Yokohama, Japan

Filed Apr. 13, 1973, Ser. No. 351,009

Claims priority, application Japan, Apr. 14, 1972, 47-37457

Int. Cl. F02d *35/00;* **F02b** *15/00;* **F02d** *33/00*

U.S. Cl. 123—119 R **24 Claims**



1. In a carburetor for an internal combustion engine having air and fuel supplying means which include mixing means for mixing air and fuel, at least one air supply passageway and a main fuel supply passageway for supplying air and fuel respectively into said mixing means, said at least one air supply passageway being in communication with the ambient atmosphere, a fuel supply reservoir for supplying fuel into said main fuel supply passageway, a flow control means operatively disposed in said main fuel supply passageway, an air-fuel mixture supply passageway for supplying air-fuel mixture from said mixing means into an induction passage of said carburetor, throttling means operatively disposed in said induction passage for controlling the amount of said air-fuel mixture being supplied into said engine, an auxiliary fuel supply pas-

sageway bypassing said flow control means of said main fuel supply passageway, flow control means operatively disposed in said auxiliary fuel supply passageway, and an air bleed jet mounted on said carburetor and communicating between the ambient atmosphere and said air and fuel supplying means; an air-fuel mixture supply control system which comprises:

electronic computing means responsive to at least one of electric signals representing prevailing values of engine operating conditions including engine speed, engine temperature, throttle opening and atmospheric pressure to produce an electric output signal representing an optimum air-fuel ratio of said air-fuel mixture and corresponding at all times to prevailing engine operating conditions;

electronic control means responsive to said output signal from said electronic computing means to produce an electric operating signal; and

an air supply metering device which is actuated by said operating signal from said electronic control means to meter a flow of air being passed through said air supply passageway from the ambient atmosphere.

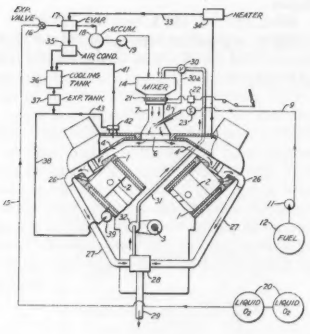
3,861,367
NON-POLLUTING INTERNAL COMBUSTION ENGINE SYSTEM

John J. Kelmar, 2205 Cypress Dr., McKeesport, Pa. 15131

Continuation-in-part of Ser. No. 243,746, April 13, 1972, abandoned. This application July 24, 1974, Ser. No. 491,239

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **5 Claims**



1. In an internal combustion engine system provided with a water jacket and with cylinders having inlet and exhaust ports and containing pistons, a liquid oxygen tank, a heat exchanger for receiving liquid oxygen from the tank, means for delivering some of the hot water from the engine water jacket to the heat exchanger for gasifying liquid oxygen therein and cooling the water, conduit means for conducting the gaseous oxygen to said inlet ports, means for conducting a predetermined percentage of exhaust gases from said exhaust ports back to said conduit means to mix with oxygen therein, a fuel supply tank, a fuel line connected to the fuel tank for delivering fuel to said mixture to form a combustible mixture, a cooling tank, means for conducting water cooled in the heat exchanger to the cooling tank, means for delivering the rest of the hot water from the engine water jacket to said cooling tank for cooling therein, and means for returning water from the cooling tank to said water jacket, said system lacking an air intake.

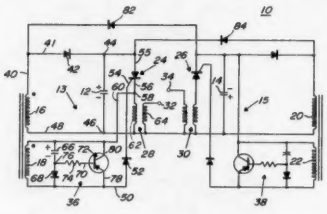
3,861,368
CAPACITIVE DISCHARGE IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Peter Dogadko, Chicago, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed June 1, 1973, Ser. No. 365,919

Int. Cl. F02p *3/06*

U.S. Cl. 123—148 E **8 Claims**



1. A capacitive discharge ignition system for an internal combustion engine having at least two cylinders including in combination: first and second charging capacitors, first and second means for charging said first and second charging capacitors, each said first and second charging means providing pulses of first and second polarities, said first charging means being connected electrically to said first charging capacitor and charging the latter when providing pulses of a first polarity and said second charging means being connected electrically to said second charging capacitor and charging the latter when providing pulses of a second polarity, first and second ignition coil means one for each cylinder coupled electrically to said first and second charging capacitors, respectively, first and second trigger means connected to said first and second capacitors, respectively, and to said first and second ignition coil means, respectively, for selectively discharging said first and second capacitors, respectively, into a corresponding one of said first and second ignition coil means and first means electrically interconnecting said first charging means with said second capacitor and second means electrically interconnecting said second charging means with said first capacitor, said second capacitor being charged by second polarity pulses from said first charging means and said first capacitor means being charged by first polarity pulses from said second charging means.

3,861,369
IGNITION-CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Robert E. Canup, Richmond, Va., assignor to Texaco, Inc., New York, N.Y.

Filed June 19, 1972, Ser. No. 263,803

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 E **4 Claims**

1. In an ignition system for an internal combustion engine, wherein said system employs controlled-duration continuous-wave high-frequency spark energy,

said spark energy being generated by an oscillator having a control winding for starting and stopping oscillation thereof at the beginning and end of each spark interval, the combination comprising

a transistor connected in series with said control winding for making and breaking a loading circuit which includes said control winding,

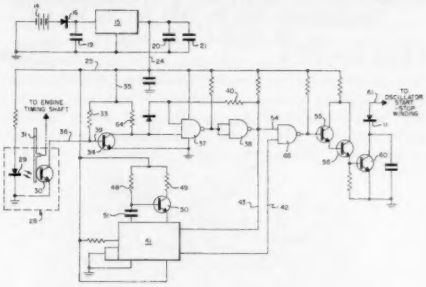
said transistor having a control circuit therefor,

engine-timed means associated with said control winding for determining said spark intervals,

said engine-timed means comprising

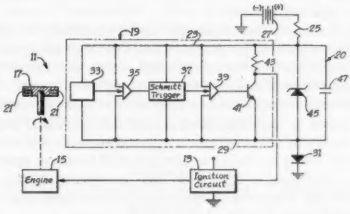
an infrared-light-emitting diode,

a phototransistor, and
a shutter driven by said engine,
circuit means for connecting said engine-timed means to said transistor control circuit,
said circuit means comprising a regenerative trigger,
time-delay means comprising a retriggerable monostable multivibrator for actuating said control circuit after a predetermined interval if said engine-timed means has



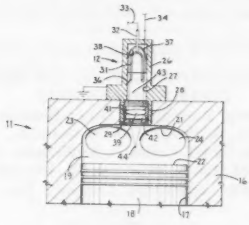
stopped between said beginning and end of a spark interval,
said circuit means also comprising a first amplifier between said engine-timed means and said regenerative trigger,
a NAND gate having at least two inputs, one from said multivibrator and one from said trigger, and
a second amplifier between said regenerative trigger and said transistor.

3,861,370
BREAKERLESS DISTRIBUTOR AND IGNITION SYSTEM UTILIZING SAME
Homer E. Howard, 2024 Paloma Dr., Costa Mesa, Calif. 92627
Filed Mar. 30, 1973, Ser. No. 346,346
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **4 Claims**



1. A breakerless distributor connectible to a source of electrical energy and to an ignition system for an engine comprising:
at least one magnet, said magnet providing a magnetic field;
rotatable means for varying the strength of the magnetic field at a predetermined location;
first and second conductors, said first conductor being couplable to the source of electrical energy;
a Hall generator coupled across said conductors and including means responsive to the strength of the magnetic field at said predetermined location for providing an analog signal, a characteristic of which is related to the strength of said magnetic field at said predetermined location;
first means coupled across said conductors and responsive to the analog signal for providing a square wave signal which is related to said analog signal;
second means for applying the square wave signal to the ignition system with the square wave signal providing timing signals for the ignition system;
a Zener diode coupled across said conductors for use in limiting the voltage across said conductors; and
a diode coupled between the second conductor and ground to provide protection against reverse voltages.

3,861,371
IGNITION SYSTEM FOR ENGINE
Joseph A. Gamell, Kalamazoo, Mich., assignor to Joseph Gamell Ind., Inc., Kalamazoo, Mich.
Filed Dec. 10, 1973, Ser. No. 423,251
Int. Cl. F23c *3/02*
U.S. Cl. 123—148 E **9 Claims**

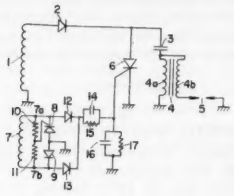


1. In an internal combustion engine having housing means defining a cylinder therein and a piston slidably disposed within said cylinder, said piston and said cylinder cooperating to define a combustion chamber, and an ignition device coacting with said combustion chamber for igniting a fuel-air mixture therein, the improvement wherein said ignition device comprises:
a support housing fixed to said housing means and defining a compartment therein;
an energizable light source positioned within said compartment for generating radiant energy, said light source consisting of a high intensity lamp;
electrical conduit means connected to said lamp for energizing same; and
means coacting between said compartment and said combustion chamber for permitting transmission of radiant energy from said compartment to said combustion chamber and for causing concentration of said radiant energy at a selected location within said combustion chamber to cause ignition of the fuel-air mixture.

3,861,372
ELECTRICAL ADVANCE DEVICE FOR AN IGNITION TIMING
Suetaroo Shibukawa, Katsuta, and Osamu Takahashi, Susono, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 22, 1973, Ser. No. 325,756
Claims priority, application Japan, Jan. 2, 1972, 48-7606
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **14 Claims**

1. An advance control device for controlling an ignition timing of the ignition circuit for an internal combustion engine comprising:
a pulse generator for generating positive and negative pulses with different timing;
rectifier means including positive pulse rectifier means for passing the positive pulses and negative pulse rectifier means for passing the negative pulses generated by said pulse generator;
speed detecting means for detecting engine speed; and

means for changing the operation of said rectifier means to that of a full-wave rectifier from that of a half-wave rectifier in response to the output from said speed detecting means.



3,861,373

MAGNETO IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

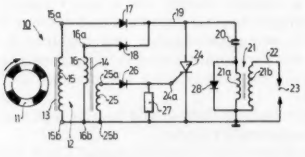
Heribert Allwang, Rothenbach; Georg Haubner, Berg, and Walter Hofer, Schwabach, all of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany

Filed Mar. 8, 1974, Ser. No. 449,288

Claims priority, application Germany, Mar. 23, 1973, 2314558

Int. Cl. F02d *1/00*

U.S. Cl. 123—148 E **12 Claims**



1. Magneto ignition system for internal combustion engines comprising

an armature **(12)**, a rotating magnet **(11)** magnetically coupled to the armature, an ignition storage capacitor **(20)**, a charging circuit **(17, 18)** connecting the capacitor and the armature to charge the capacitor, and a discharge circuit **(26, 24, 27)** including a discharge control winding **(25)** polarized oppositely to the armature and connected to the capacitor to discharge the capacitor through an ignition coil **(21)** to generate an ignition spark pulse for a spark plug **(23)**,

and wherein the armature comprises two individual cores **(13, 14)** and two windings **(15, 16)** each located on an individual core **(13, 14)**; the charging circuit comprises diodes **(17, 18)** connected and poled to electrically uncouple said two windings **(15, 16)** from each other,

characterized in that

the numbers of turns of the windings **(15, 16)** are different to provide charge energy to the capacitor **(20)** over a wide range of engine speed;

and in that the control winding **(25)** is a separate winding wound on one of said individual cores, and connected in phase opposition with respect to the winding on said one core to provide energy to control the discharge of the capacitor when no charge energy is required from the armature windings, and to generate said control energy independently of induction in any one of the armature windings.

3,861,374

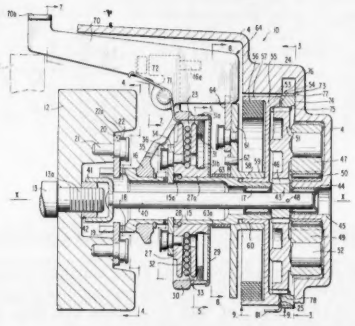
LIGHTWEIGHT CHAIN SAW WITH ENGINE RESTARTING SYSTEM AND METHOD AND APPARATUS FOR RESTARTING A WARM INTERNAL COMBUSTION ENGINE

James L. Dooley, Santa Monica, and Clarence J. Harasta, Los Angeles, both of Calif., assignors to McCullock Corporation, Los Angeles, Calif.

Division of Ser. No. 140,371, May 5, 1971, Pat. No. 3,763,842. This application May 29, 1973, Ser. No. 364,318

Int. Cl. F02h *5/02, 3/02*

U.S. Cl. 123—179 S **8 Claims**



1. A method of storing energy in an engine starting mechanism, said method comprising:

providing a continuously operable generating means to generate engine restarting energy;

storing an amount of energy generated by said generating means in energy storing means;

providing energy diverting means including

energy transmitting reaction means engaged with said energy storage means and operable, while stationary relative to said energy storage means, to transmit energy from said generating means to said energy storage means, and

slip clutch means yieldably and frictionally engaging said reaction means;

after said amount of energy has been stored, diverting energy from said generating means through energy diverting means, away from said storage means while continuing to operate said engine and said generating means;

initiating energy diverting operation of said energy diverting means in response to an accumulation of said amount of energy by said energy storage means, with said accumulation being operable to prevent said reaction means from transmitting energy from said generating means to said storage means by causing said reaction means to movably yield relative to said slip clutch means;

maintaining said slip clutch means in continuous frictional, but yieldable, engagement with said reaction means; and maintaining said generating means in continuous engagement with each of said energy storage means and said reaction means.

3,861,375

CYLINDER HEAD FOR A DIESEL ENGINE

Jean Excoffon, Villeurbanne, France, assignor to Automobiles M. Berliet, Lyon, (Rome), France

Filed Feb. 16, 1972, Ser. No. 226,721

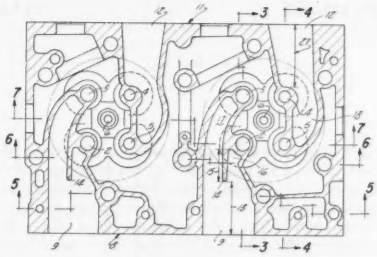
Int. Cl. F02f *1/42*

U.S. Cl. 123—188 M **3 Claims**

1. In a diesel engine of the type having a plurality of cylinders wherein each cylinder has two axially spaced inlet valves and two axially spaced exhaust valves arranged about a central injector-receiving bore, the engine being provided with a

cylinder head having a joining plane for two or more adjacent cylinders, and having bores to receive the stems of the inlet valves and the exhaust valves, the improvement which comprises:

a. for each of the cylinders, a common inlet conduit extending from a first side face of the cylinder head into the interior of the head and having a rectilinear configuration, a partition perpendicular to said joining plane disposed within the head and extending between the two inlet valves to divide the common inlet conduit into two smaller conduits, the two smaller conduits being coplanar with respect to each other, each of the two smaller conduits being associated with one of the inlet valves, one of the two smaller conduits extends to the inlet valve closest to the first side face of the cylinder head and opens directly into a recess for the inlet valve, the other one of the two smaller conduits extends to the inlet valve



most distant from the first side face of the cylinder head and is curved inwardly toward the axis of the cylinder,

b. for each of the cylinders, a common exhaust conduit opening to a second side face of the cylinder head opposite to the first side face, the exhaust conduit having a substantially rectilinear section over a length leading to a first of the two exhaust valves which is closest to the second side face and thereafter being curved inwardly towards the axis of the cylinder over a length leading to a second of the two exhaust valves, and wherein

c. the axes of the two inlet valve stem bores are disposed in a plane extending perpendicular to said joining plane of the cylinder head and perpendicular to the first side face of the cylinder head, and the axes of the exhaust valve stem bores are disposed in a plane perpendicular to the second side face of the cylinder head, and the adjacent cylinder being analogously configured.

3,861,376

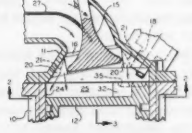
IN-CYLINDER MIXERS FOR INTERNAL COMBUSTION ENGINES

Carlyle M. Ashley, 7320 Barberry Ln., Manlius, N.Y. 13104

Filed Nov. 19, 1973, Ser. No. 417,072

Int. Cl. F02b *23/00;* **F02m** *29/00*

U.S. Cl. 123—191 R **10 Claims**



1. In an internal combustion engine including a cylinder head defining a chamber, an intake passage communicating with the chamber, and an intake valve for controlling the passage of vaporized fuel and gases through the intake passage; means for mixing the vaporized fuel, air and previously burned gases uniformly prior to combustion, said last-named means comprising means for dividing the intake fuel and air stream leaving the intake valve into at least several streams and directing at least a substantial portion of said streams along the chamber to avoid impingement of the centers of the streams on the chamber side wall and to avoid the formation of a toroidal vortex in the chamber.

3,861,377

THROTTLE VALVE ARRANGEMENT FOR A COMBUSTION ENGINE

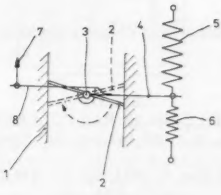
Kurt Hiestermann, Tappenbeck, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Dec. 28, 1973, Ser. No. 429,134

Claims priority, application Germany, Jan. 12, 1973, 2301446

Int. Cl. F02b *77/08, 11/04;* **B60k** *22/08*

U.S. Cl. 123—198 D **3 Claims**



1. In a combustion engine having a suction conduit, a throttle valve placed into said suction conduit for controlling the gas and air mixture flow to the engine combustion spaces, a spring arrangement operatively coupled to said throttle valve and tending to return said throttle valve into an idle run position when an actuating force through the accelerator pedal is discontinued, said spring arrangement comprising a first spring means and a second spring means, said second spring means being coupled to said throttle valve means for rotating said throttle valve means when said first spring means is broken into a position of said throttle valve means corresponding substantially to the idle position of the engine but in a direction of rotation opposite to the direction of rotation by said first spring means, said first spring means exerting a momentum on said throttle valve larger than the momentum exerted by said second spring means resulting in a difference in momenta rotating the throttle valve into its idle-run position when said actuating force is discontinued.

3,861,378

REVERSIBLE AIR FLOW OVEN

Delmar Dean Rhoads; Robert H. MacKay, both of Fort Wayne, Ind.; Gary W. Krimmel, Barrington, Ill., and Victor A. Canevello, Beltsville, Md., assignors to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.

Filed Aug. 27, 1969, Ser. No. 853,339

Int. Cl. A21b *1/06*

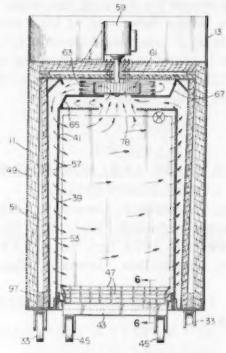
U.S. Cl. 126—21 A **6 Claims**

1. In a forced air oven the improvement comprising:

means for reversing periodically the direction of air flow past a product to be heated; and

means for maintaining uniform the quantity of air flowing at different levels within the oven comprising duct means and diffuser means, said diffuser means comprising a plurality of plates having a plurality of apertures therein said apertures being of increased cross sectional area at progressively lower levels within the oven and said duct

means comprising a plurality of ducts each communicating with a single plenum, said ducts being of diminishing



cross sectional area at progressively lower levels within the oven.

3,861,379

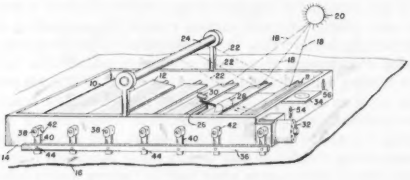
LOW PROFILE SOLAR RAY CONCENTRATOR

Henry Anderson, Jr., 9401 Seminole St., Silver Spring, Md. 20901

Filed Mar. 5, 1974, Ser. No. 448,279

Int. Cl. F24j *3/02*

U.S. Cl. 126—271 **15 Claims**



1. A solar ray concentrator comprising:

a fixably mounted framework;

a plurality of parallel reflectors pivotably mounted on said framework for rotation about their longitudinal axes;

collector means for intercepting and collecting reflected solar rays from said reflectors; and

means coupled to said reflectors for individually and uniformly rotating said reflectors to track the sun whereby said solar rays are reflected toward said collector means, said rotating means comprising:

a sun detector having a focal line in the reflective plane between said collector means and a first reflector for supplying an output signal upon the lack of detection of a reflected solar ray from said first reflector, said sun detector comprising a cylindrical lens independently mounted to said framework between said first reflector and said collector means, and a first photoelectric device independently mounted to said framework between said lens and said collector means, said first photoelectric device situated in the focal line of said lens, whereby reflected solar rays from said first reflector, if properly directed at said collector means, would cause illumination of said first photoelectric device while reflected solar ray from said first reflector not causing illumination of said first photoelectric device would cause said first photoelectric device to supply said output signal; and

an electromagnetic device coupled to receive said output signal and supply a signal to said reflectors for rotating said reflectors in the direction of the sun's apparent motion until said sun detector detects reflected solar rays from said first reflector.

3,861,380

RADIOACTIVE SOURCE PROJECTOR

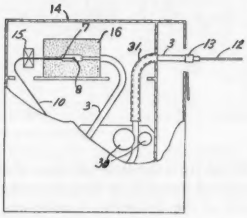
Daniel Chassagne, Wissous; Gilles Delouche, Paris; Jean Fradin, Bois Comombes, and Jean-Antoine Rocoplan, Sevres, all of France, assignors to Commissariat a L'Energie Atomique, Paris, France

Continuation-in-part of Ser. No. 11,226, Feb. 13, 1970, abandoned. This application Oct. 24, 1972, Ser. No. 300,222

Claims priority, application France, Feb. 28, 1969, 69.05574

Int. Cl. A61n *5/01*

U.S. Cl. 128—1.2 **13 Claims**



1. A radioactive-source projector which comprises:

1. a moveable casing including openings;

2. source-holder means in said casing and extendable through said openings, said source-holder means containing radioactive sources, and said source-holder means including a flexible tubular element that is closed at one end and adapted to be applied to the vicinity of a cancerous tissue to be treated in a living body, and that is opened at the other end for receiving said radioactive sources;

3. shield block means in said casing containing said source-holder means to afford protection against the radioactive sources positioned within said moveable casing;

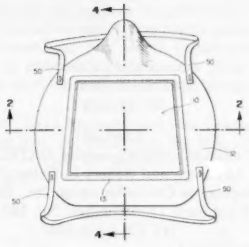
4. flexible outer tube means receiving said one end of said source-holder means, said outer tube means having a small outer diameter and being adapted to be placed adjacent to the surface of a living body for treatment of cancerous tissue;

5. flexible ejection sheath means having one end connected to said shield block means and another end connected removably to said flexible outer tube for guiding said source-holder means from said shield block means to said flexible outer tube means;

6. actuating cable means removably coupled to said source-holder means for displacing said source-holder means through said flexible ejection sheath means; and

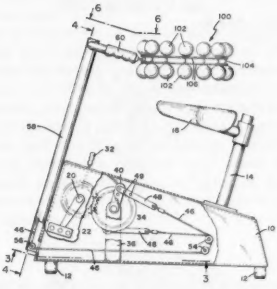
7. transfer means for transferring said actuating cable means and the associated source-holder means via said flexible ejection sheath means from said shield block means to said outer tube means and from said outer tube means to said shield block means.

3,861,381
DISPOSABLE RESPIRATOR
Ronald L. Witman, Sinking Spring, and Guy G. Klinger, Shillington, both of Pa., assignors to ESB Incorporated, Philadelphia, Pa.
Filed Apr. 2, 1973, Ser. No. 346,991
Int. Cl. A62b *23/00*
U.S. Cl. 128—146.6 9 Claims



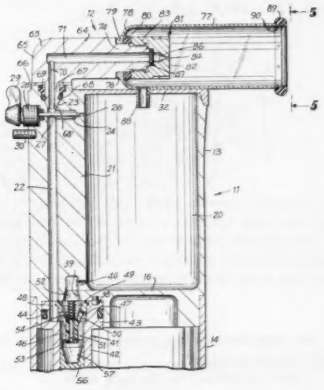
1. In a respirator of the type having a fibrous mat filter element, a respirator shell portion and a joint portion the joint portion uniting the shell portion and the filter element, the improvement which comprises: the inclusion in the joint portion of a solid area containing both shell material and filter fibers and fusion welds between fibers of the filter element and the material of the shell portion.

3,861,382
EXERCISE AND MASSAGING APPARATUS
Luther G. Simjian, 7 Laurel Ln., Greenwich, Conn. 06830
Filed Oct. 11, 1973, Ser. No. 405,406
Int. Cl. A61h *11/00*
U.S. Cl. 128—58 21 Claims



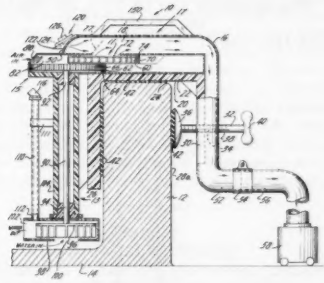
1. An exercise and massaging apparatus comprising:
a support structure;
motive means coupled to said structure for being operated by a person;
a massaging belt for being worn by the person, said belt having two ends, and
means coupling said motive means to said ends for causing said belt when worn and encircling a body portion to undergo cyclic side-to-side oscillating motion responsive to the operation of said motive means, whereby to cause substantially no tightening and slackening of said belt during such motion.

3,861,383
SKIN MASSAGING INSTRUMENT
Leslie J. Kovach, 880 Fifth Ave., New York, N.Y. 10021
Filed Sept. 24, 1973, Ser. No. 400,213
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 9 Claims



1. A massage device comprising a liquid confining shield member having an opening at its distal end and a drain opening, a nozzle directed through said shield member toward said distal opening, a liquid reservoir, and means for producing a pulsating liquid flow from said nozzle and including a positive displacement intermittent pump having an outlet communicating with said nozzle and an inlet communicating with the lower part of said reservoir, said drain opening communicating with said reservoir.

3,861,384
PORTABLE HYDROTHERAPEUTIC DEVICE
Samuel E. Casternovia, 133 Baltusrol Way, Springfield, N.J. 07081
Filed Feb. 25, 1974, Ser. No. 445,452
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 19 Claims



1. A hydrotherapeutic device comprising in combination, a housing, agitating means connected to said housing and adapted to be disposed in a water bath, drive means in operative communication with said agitating means and adapted to drive said agitating means, and suction means in operative communication with said drive means for powering said drive means, said drive means and suction means being adapted to be disposed out of contact with said water bath.

3,861,385
ANAESTHETIST'S VENTILATION

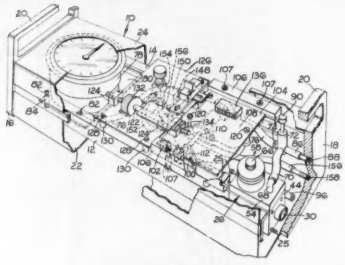
Edward Carden, Cavendish House, Priestnall Rd., Heaton Mersey, Stockport, Cheshire, England

Filed Aug. 17, 1973, Ser. No. 389,233

Claims priority, application Great Britain, Aug. 25, 1972, 39621/72

Int. Cl. A61m *16/00*

U.S. Cl. 128—145.8 **5 Claims**



1. An anaesthetist's ventilator comprising: a face mask for application to a patient,

a T-piece connected to the face mask,

a gas supply means connected to the T-piece for continuous gas supply to the face mask,

a cylinder,

means connecting the cylinder to the T-piece for the continuous supply of gas to the cylinder,

vent means in the cylinder,

a piston alternatingly reciprocable in the cylinder between a position of closing off the vent means for the preclusion of gas escape therethrough and a position of opening the vent means for the allowance of gas escape and a consequent drop in the pressure of the gas supply to the face mask, and means for reciprocating the piston.

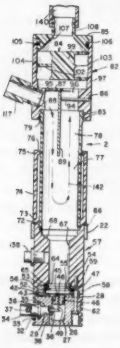
3,861,386
ULTRASONIC NEBULIZER

Raleigh J. Harris, and Allan E. Peck, both of Oakland, Calif., assignors to Misto & Gen Equipment Co., Oakland, Calif.

Continuation of Ser. No. 777,986, Nov. 6, 1968, , which is a continuation of Ser. No. 552,332, Jan. 12, 1966, abandoned. This application May 19, 1971, Ser. No. 145,043

Int. Cl. A61m *11/04*

U.S. Cl. 128—194 **4 Claims**



4. In a device for ultrasonic nebulization of liquid, including a generally vertically elongated nebulizer chamber having a closed bottom end and an outlet at its upper end, receiving therein said liquid with an upper surface a predetermined level above said bottom end, a generally flat electromechanical transducer at said bottom end having a planar surface in acoustical contact with said liquid and means for causing said transducer to generate ultrasonic waves in said liquid, means for concentrating said waves at said predetermined level, comprising:

a. a nebulizer chamber portion of substantially circular interior cross-section extending from said planar surface substantially to said predetermined level, said interior cross-section being of uniform diameter between points immediately above said planar surface of said transducer and immediately below said predetermined level, said points being spaced apart a distance at least twice the length of said uniform diameter.

3,861,387
CARDIAC ARRHYTHMIA DETECTOR

Richard D. Lawhorn, and Robert L. Nelson, both of Dublin, Calif., assignors to Cardiodynamics, Inc., Dublin, Calif.

Filed Sept. 11, 1972, Ser. No. 287,608

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 A **8 Claims**

4. A detector for missing R waves comprising in combination:

a. a set of electrodes adapted to be applied to the body,

b. circuit means connected to said electrodes, said circuit means including means to identify a missing R wave, including means for measuring the interval between each successive pair of normal R waveforms, and means for declaring a misssing R wave when the current interval is greater than about 1.5 times the immediately previous interval, alarm means and means for actuating said alarm means upon said declaration.

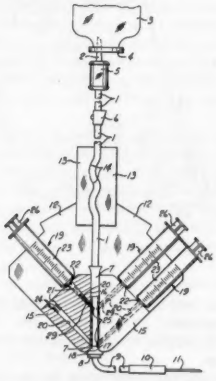
3,861,388
APPARATUS FOR ADMINISTERING SUPPLEMENTAL MEDICATION WITH PARENTERAL SOLUTIONS

Robert Lee Vaughn, 707 Beechwood Blvd., Ellwood City, Pa. 16117

Filed July 30, 1973, Ser. No. 383,904

Int. Cl. A61m *05/00*

U.S. Cl. 128—214 R **13 Claims**



1. An apparatus for administering supplemental medication with parenteral solutions comprising in combination:

an elongated conduit having one end adapted to be connected to a liquid to be administered and the other end adapted for connection means for administering a parenteral solution to a patient;

a pierceable, elastomeric tube member communicating with said conduit for permitting additives to be medically administered into said conduit;

a support;

attaching means holding said pierceable, elastomeric tube member on said support;

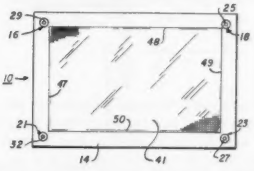
hypodermic syringe mounting means on said support adapted to rigidly hold at least one hypodermic syringe independently of said tube member while the needle thereof is piercing said pierceable, elastomeric tube member for administration of additives from said hypodermic syringe into said conduit.

3,861,389

STEAM PACK COVER AND SNAP FASTENING DEVICES THEREFOR

Thorkil Winther, 5512 Brainard Ave., La Grange, Ill. 60525

Filed Nov. 20, 1972, Ser. No. 308,129
Int. Cl. A61f 7/00
U.S. Cl. 128—254 **7 Claims**



1. A cover for a steam pack, comprising:

a sheet of flexible material adapted to at least partially enclose the steam pack and having a plurality of snap fastening devices,

first and second ones of said devices being arranged at marginal edges of said sheet, each one of said first and second devices having a male member extending from one face of said sheet and having a female member axially aligned with and connected through said sheet to said male member and extending from the opposite face of said sheet; and

third and fourth ones of said devices being arranged at marginal edges of said sheet, each one of said third and fourth devices having a male member extending from said opposite face of said sheet and adapted to snap into engagement with one of said female members of said first and second devices and having a female member extending from said one face of said sheet in axial alignment with and connected through said sheet to the last-mentioned male member and adapted to snap into engagement with one of said male members of said first and second devices.

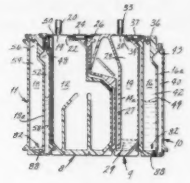
3,861,390

THORACIC DRAINAGE UNIT WITH OVERFLOW PREVENTING VALVE

Eli Schachet, St. Louis, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Aug. 6, 1973, Ser. No. 386,131
Int. Cl. A61m 1/00
U.S. Cl. 128—276 **12 Claims**

1. A thoracic drainage device comprising a drainage collector chamber having an inlet for connection with a body cavity to be drained, means for producing negative pressure in said collector chamber for drawing fluid from the cavity into said collector chamber, a second chamber including first and second channels interconnected at the lower ends thereof in fluid communication, said second chamber being coupled in fluid communication with said collector chamber and adapted to receive a liquid which flows in opposite directions between said channels in response to normal pressure changes occurring in said collector chamber during normal operation of the device, and valve means in said second chamber within the path of liquid flow for providing substantially unrestricted flow of liquid through said valve means and between said



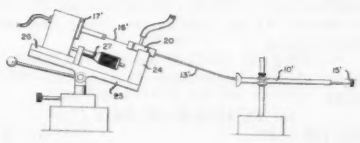
channels in both directions during normal operation, said valve means being responsive to a pressure surge in said collector chamber to restrict the flow of liquid through said valve means in one direction to allow restricted liquid flow between said channels to prevent discharge of liquid from said second chamber.

3,861,391

APPARATUS FOR DISINTEGRATION OF URINARY CALCULI

John N. Antonevich, Jamestown, N.Y., and Roger Goodfriend, San Jose, Calif., assignors to Blackstone Corporation, Jamestown, N.Y.

Division of Ser. No. 273,985, July 2, 1972, Pat. No. 3,830,240.
This application Mar. 20, 1974, Ser. No. 453,063
Int. Cl. A61b 17/22
U.S. Cl. 128—328 **6 Claims**



1. An apparatus for fragmenting and drilling urinary calculi comprising a catheter adapted to be inserted into a ureter to abut the calculi to be removed, a coupling member extending lengthwise of the lumen of said catheter and having a diameter less than the diameter of said lumen whereby said coupling member may vibrate transversely within the catheter, ultrasonic means acting on the coupling member to cause transverse vibration of the end thereof adjacent the calculi, and means engaging the end of the catheter remote from the calculi whereby said end is immobilized relatively to the ultrasonic means and the ultrasonic means is mounted on a slide movable at a controlled rate to and from said catheter.

3,861,392

ACUPUNCTURE NEEDLE

George A. Moen, 827 W. 26th Ave., Anchorage, Alaska 99503

Filed Aug. 13, 1973, Ser. No. 387,597
Int. Cl. A61b 17/34
U.S. Cl. 128—329 **3 Claims**

1. An acupuncture needle, comprising

a unitary, solid rigid needle body formed of stainless steel and including

a. a pointed portion at one end of said body;

b. a handle portion at the other end of said body; and

c. a plurality of longitudinally spaced intermediate portions arranged between said pointed and handle portions, successive ones of said intermediate portions in the direction

from said pointed portion to said handle portion having progressively increasing diameters, respectively;

d. said handle portion having throughout its entire length a uniform circular cross sectional configuration the diameter of which is greater than that of the adjacent intermediate portion;

e. said handle portion having a roughened peripheral surface to permit rotation of the needle between a thumb and forefinger of a user during insertion of the pointed end of the needle into a selected acupuncture meridian point on a patient.

3,861,393

PENETRATING DEVICE FOR SURGICAL DRAINAGE

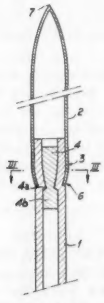
Herve Durand, 12 rue Jean Jaures, 95600 Eaubonne (Val d'Oise), France

Filed Oct. 17, 1973, Ser. No. 407,216

Claims priority, application France, Oct. 17, 1972, 72.36701

Int. Cl. A61m *25/00;* **A61b** *17/34*

U.S. Cl. 128—347 **6 Claims**



1. A penetrating device for surgical drainage comprising a tube of flexible material; a needle adapted to be inserted in flesh and having a pointed end and an opposite hollow end portion extending over and being tightly fitted on a corresponding end portion of said tube; and a substantially ridig filling part fitted into said end portion of said tube so that said tube end portion is securely held between said tightly fitted end portion of said needle and said filling part.

3,861,394

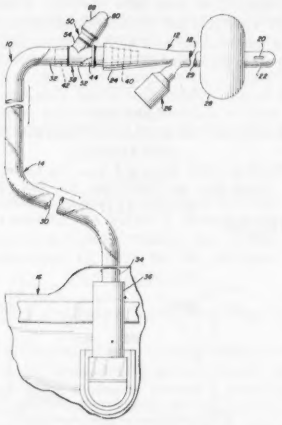
CLEARING MEANS FOR A LIQUID DRAINAGE SYSTEM

Frank K. Villari, Oak Park, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Mar. 5, 1973, Ser. No. 338,136

Int. Cl. A61m *25/00*

U.S. Cl. 128—349 R **8 Claims**



1. In a liquid drainage system having a drainage lumen, clearing means, comprising:

one-way valve means connected to and in fluid communication with said drainage lumen permitting the passage of air through the valve means to the drainage lumen, while preventing the passage of fluid from the drainage lumen through the valve means;

means connected to the valve means for selectively pumping air from the atmosphere through the valve means into the drainage lumen for clearing the drainage lumen of suspended liquid; and

air permeable filter means within said clearing means intermediate the atmosphere and the drainage lumen for filtering the pumped air and preventing contamination to the drainage lumen.

3,861,395

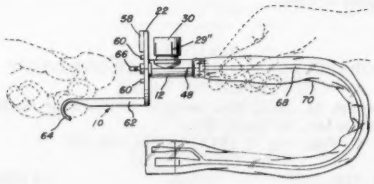
AUTOMATED CATHETER

Tokuso Taniguchi, 277 Kaiulani St., Hilo, Hawaii 96720

Filed Sept. 25, 1973, Ser. No. 400,694

Int. Cl. A61m *25/00*

U.S. Cl. 128—349 R **15 Claims**



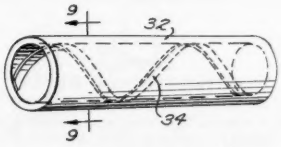
1. A catheter assembly for packaging in sterile condition within a removable protective envelope, said assembly including an elongated separable rigid body having a longitudinal passageway formed therethrough including a transversely enlarged mid-portion, said body including a distal living body engaging shield, lubrication reservoir means supported from said rigid body and communicating with said enlarged mid-portion and comprising a means for dispensing a lubricant into

said passageway mid-portion, a catheter having its distal end telescoped in said passageway from one end thereof and positioned in said enlarged mid-portion, said rigid body being provided with weakened opposite side portions extending longitudinally thereof whereby said body may be readily separated from about said catheter.

3,861,396
DRAINAGE TUBE

Vincent L. Vaillancourt, Livingston; Norman Bruckner, East Windsor, and Edward Levine, Metuchen, all of N.J., assignors to Hydro Med Sciences Inc., New York, N.Y.

Filed Aug. 8, 1973, Ser. No. 386,572
Int. Cl. A61m *27/00*
U.S. Cl. 128—350 R **9 Claims**

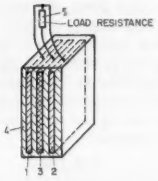


1. A means for eliminating negative pressure and negative pressure build-up in a drainage tube in a system for the drainage of liquid from a body cavity comprising a tube of said system having an internal diameter of at least 0.2 inch, said means further including a coating extending the length of the tube and on at least a part of the inner peripheral surface of the drainage tube, wherein said coating is comprised, at least in part of a hydrophilic, water-insoluble plastic.

3,861,397
IMPLANTABLE FUEL CELL

Raghavendra Rao, and Gerhard Richter, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Dec. 4, 1972, Ser. No. 311,956
Claims priority, application Germany, Jan. 3, 1972, 2200054
Int. Cl. A61n *1/00*
U.S. Cl. 128—419 B **6 Claims**



1. An implantable fuel cell, particularly for operating heart beat actuators, artificial hearts and the like, said cell in operational condition utilizing an oxidizable body substance, preferably glucose as fuel, and oxygen from the body fluids, said cell comprising an enclosure impermeable to body fluids, a fuel electrode means, at least one porous oxygen electrode means selectively reacting oxygen in the presence of fuel, said electrode means located in said enclosure and including associated electrical connection means for deriving electrical energy from the cell under the condition of operation, hydrophilic means which are non-permeable to proteinous substance, blood corpuscles, etc., spacing said electrode means from each other and said enclosure and means in said enclosure for guiding the diffusing operational mixture of fuel and oxygen first to said selective oxygen electrode means and there through to said fuel electrode means.

3,861,398
FOOT BALANCING SURFACE FOR SHOES

Charles P. Leydecker, 58 Bellerive Acres, St. Louis, Mo. 63121

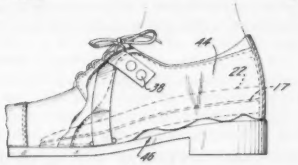
Filed May 17, 1973, Ser. No. 361,340
Int. Cl. A61f *5/14*
U.S. Cl. 128—615 **7 Claims**

1. In combination with a shoe, a surface contoured generally to the plantar surface of the foot including a posterior, concave area adapted to receive and support the os calcis and having side walls adapted to restrain the os calcis from lateral or medial movement with respect to the shoe, the anterior wall of the heel depression extending forwardly and upwardly to terminate in a substantially planar elevated, lateral supporting area for supporting the plantar protuberance of the fifth metatarsal.

3,861,399
ARCH SUPPORT AND HEEL PROTECTOR

Basil D. Huff, 94 Ferry Rd., Breslau, Wilkes-Barre, Pa. 18702

Filed Feb. 1, 1974, Ser. No. 438,850
Int. Cl. A61f *5/14*
U.S. Cl. 128—622 **4 Claims**



1. A combined heel protector and arch support, comprising:
a. a first layered arch support having a plurality of male attachment means on one of its surfaces;
b. a second layered arch support, similar in dimension to said first arch support, having a plurality of female attachment means on one of its surfaces, in which said female means are complementary to said male means and are snapped thereon in order to form a two-tiered arch support in which said first and second supports are separated by a slight transverse displacement which is defined by the physical closeness of the mate between said male and female attachment means; and
c. a padded heel protector enclosing enclose said first and second supports about every surface of said supports except the surface of said first support which faces the heel of the user, and including means on said heel protec-

tor for holding said supports in engagement with said heel protector whereby the above-defined combination may be easily inserted into the housing of a conventional shoe for the attainment of added comfort and arch support.

3,861,400

NICOTINE FORTIFICATION OF SMOKING PRODUCTS

Paul Raymond Perkins, Portishead, and Christopher Ralph Bale, Keynsham, near Bristol, both of England, assignors to Imperial Tobacco Group Limited, London, England

Filed Sept. 12, 1972, Ser. No. 288,329

Claims priority, application Great Britain, Sept. 23, 1971, 44370/71

Int. Cl. A24b *03/14, 15/04*

U.S. Cl. 131—2 **7 Claims**

1. A process for making a smoking material selected from the group consisting of tobacco, reconstituted tobacco and substitute tobacco which comprises adding to an acceptable smoking base material a minor amount of a material selected from the group consisting of a nicotine derivative of polygalacturonic acid and a nicotine derivative of a polymannuronic acid whereby on pyrolysis of the resulting smoking material small controlled amounts of nicotine are released into the smoke.

3,861,401

SMOKABLE TOBACCO SUBSTITUTE MATERIAL AND METHOD

Theodore S. Briskin, 1016 Ridgedale Dr., Beverly Hills, Calif. 90210, and Inderjit H. Sabherwal, 3730 McClintock Ave., Los Angeles, Calif. 90007

Filed Mar. 8, 1973, Ser. No. 339,148

Int. Cl. A24b *15/00*

U.S. Cl. 131—2 **39 Claims**

1. A smokable material comprising the product of the thermal reaction of a cellulosic material in the form of a fibrous carbohydrate containing 3–15 percent by weight alkaline earth metal salt of a carboxylic acid, at a temperature within the range of 275°–375°C in a non-oxidizing atmosphere until the weight loss of cellulosic material is at least 60 percent.

3,861,402

SMOKABLE MATERIAL AND METHOD FOR PREPARATION OF SAME

Theodore S. Briskin, Beverly Hills, Calif., assignor to Sutton Research Corporation, Los Angles, Calif.

Filed Oct. 23, 1973, Ser. No. 408,655

Int. Cl. A24b *15/00*

U.S. Cl. 131—2 **46 Claims**

1. A smokable material comprising the thermal reaction product, in a non-oxidizing atmosphere, of a cellulosic material containing 10–30percent by weight of a compound selected from the group consisting of the carbonate, oxalate, pivalate and glycolate of an alkaline earth metal and 0.5–25 percent by weight of a compound selected from the group consisting of a metal chloride and a metal sulfate, in which the cellulosic material is exposed to a temperature within the range of 275°–500°C for a time sufficient to effect a weight loss within the range of 40–75 percent, and a flexibilizing and strengthening binder uniformly distributed in the thermally treated cellulosic material in an amount within the range of 0.5–10 percent by weight of the cellulosic material.

3,861,403

NOVEL TOBACCO PRODUCT COMPRISING ONE OR MORE ALPHA-PYRONES

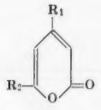
Joaquin Francisco Vinals, Red Bank, N.J.; Alton Dewitt Quinn, Abrahamsville, Pa., and Alan Owen Pittet, Atlantic Highlands, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 20, 1974, Ser. No. 471,785

Int. Cl. A24b *15/00*

U.S. Cl. 131—17 R **12 Claims**

1. A tobacco product having added thereto a small amount sufficient to alter the flavor or aroma of the tobacco product of one or more 6-alkyl-alpha-pyrone compound having the formula:



wherein R_1 is selected from the group consisting of methyl and hydrogen; and R_2 is C_3–C_5 alkyl.

3,861,404

TOBACCO SMOKE FILTER

Pushpkumar Dewanmal Changani, Newport, England, assignor to Monsanto Chemicals Limited, London, England

Continuation of Ser. No. 22,068, March 23, 1970, abandoned. This application June 13, 1973, Ser. No. 369,680

Int. Cl. A24d *1/04*

U.S. Cl. 131—269 **2 Claims**

1. An improved foamed open cell tobacco smoke filtering element the improvement comprising, foamed Nylon 6 having from 60 to 95% open perforated cell structure, a density of from 1 to 5 pounds per cubic foot and said cells having a diameter of about 0.002 to about 0.02 inch, said filtering element having the form of an extruded rod having an impervious substantially nonfoamed Nylon 6 skin and traverse cross-section substantially corresponding to the final element and which coresponds to the diameter of the cigarette, the cigarette holder or the stem of a pipe in which it is to be fitted and the hardness of the rod is from 75 to 95%, the resilence of the rod is from 90 to 100% and the pressure drop across said rod about 15 millimeters in length at a flow rate of 1500 cubic centimeters per minute is between 2 and 8 centimeters of water gauge providing low resistance to the flow of smoke through the filter element.

3,861,405

HAIR DRESSING DEVICE

Daniel Pellecchia, 4 Virginia Dr., McKeesport, Pa. 15132

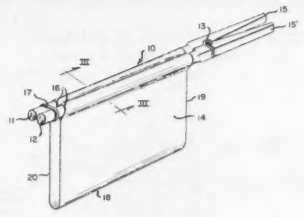
Filed Mar. 8, 1973, Ser. No. 339,056

Int. Cl. A45d *1/00*

U.S. Cl. 132—9 **3 Claims**

1. A hair dressing device comprising a plurality of jaw members, said jaw members pivotally attached near one end by biasing means fixedly attached thereto, said biasing means maintaining said jaw members in contact whereby said jaws

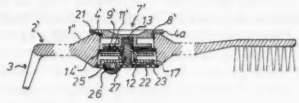
are normally in closed contact and may be applied by the user by opening the jaws against the biasing means and hair isolating means fixedly attached to the other end of said jaw members.



3,861,406
TOOTH CLEANING DEVICE

Ralph E. Stitt, Frankfurt American High School, APO, New York, N.Y. 09039

Filed Dec. 4, 1972, Ser. No. 311,768
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 A 11 Claims

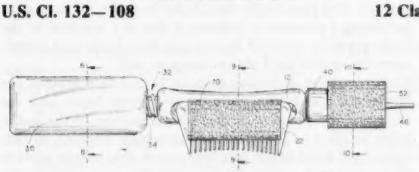


1. In a device for cleaning of the teeth in the area between the teeth having stretched floss supplied from a floss supply spool turnably mounted on an axis in a first housing in a handle connected to the base of a two ended tined fork and over the fork tine ends the floss is guided and returned to the housing to a take-up spool, turnably mounted on an axis in a second housing and turnable by hand from outside the handle in only one direction, thereby retrieving the used floss by simple finger movements the combination comprising:
   a. an arrestable supply spool having a flange projecting toward the housing provided with at least one projection positioned at a predetermined radial distance from the turning axis of the supply spool; and
   b. in the movement path of this projection on the supply spool at least one other projection which extends from and is bound to the housing so as to serve as a stop or block to the supply spool projection movement upon manual turning of the take-up spool to renew the floss between the tines.

3,861,407
HAIR DYE APPLICATOR

Samuel Gabriele, 1055 66th St., Brooklyn, N.Y. 11219

Filed July 18, 1973, Ser. No. 380,397
Int. Cl. A45d *24/16*
U.S. Cl. 132—108 12 Claims

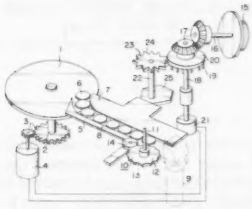


1. A hair dye applicator comprising an elongate substantially cylindrical body; fluid conduit means extending through said cylindrical body between the ends thereof; first connecting means at one end of said cylindrical body for interchangeably connecting the latter and said conduit means to a flexible walled fluid container containing liquid to be dispensed; an interchangeable nose piece mountable on the other end of said cylindrical body, said nose piece having a fluid dispensing channel having at least one opening at a selected location relative to said cylindrical body; and second connecting means on the other end of said cylindrical body for interchangeably connecting said nose piece to said cylindrical body and for placing said conduit means in fluid flow communication with said fluid dispensing channel, whereby said cylindrical body may be connected to a flexible walled fluid containing hair dye and a suitable nose piece may be connected to said cylindrical body for dispensing fluid in the fluid container at a selected location relative to said cylindrical body by squeezing the fluid container and by forcing the fluid through said conduit means while the applicator is passed through the hair.

3,861,408
ROTARY DISK SPEED CONTROL IN AUTOMATIC COIN PROCESSING APPARATUS

Yoshihiro Hatanaka; Kazuto Asami, and Shiro Nakai, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo-ken, Japan

Filed Nov. 5, 1973, Ser. No. 412,546
Claims priority, application Japan, Nov. 8, 1972, 47-112473
Int. Cl. G07d *9/04, 9/06, 3/16*
U.S. Cl. 133—8 R 4 Claims



1. A coin processing apparatus having: a rotary disk for continuously sending out coins; a coin passageway for alining in a row and transferring the coins thus sent out from the rotary disk; driving means for rotating the rotary disk; speed-changing means connected to the rotary disk and driving means and operating to change the rotational speed of the rotary disk; and selection means for selecting the rotational speed of the rotary disk in accordance with the kind of coin, and characterized in that the rotational speed of the rotary disk is caused to be a coin sending-out speed in accordance with the kind of coin.

3,861,409
AUTOMATIC CLEANSING APPARATUS FOR USE IN ASSOCIATION WITH AMPOULES OR SIMILAR CONTAINERS

Shin-Ichi Taniguchi, Nara, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

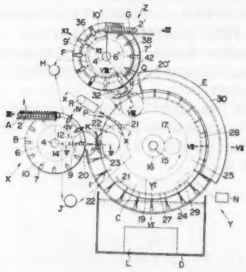
Filed Feb. 21, 1973, Ser. No. 334,248
Claims priority, application Japan, Feb. 21, 1972, 47-18331
Int. Cl. B08b *3/02*
U.S. Cl. 134—43 14 Claims

1. An automatic cleansing apparatus for ampoules or similar containers, which comprises:
   a rotatory transport drum having a plurality of nozzles for ejection of cleansing fluid, each of said plurality of nozzles projecting radially outwardly from and at equal intervals around the periphery of said rotatory transport drum, said nozzles adapted to be inserted within said ampoules;

a rotatory supply disc positioned adjacent said transport drum and having pockets therein, each pocket adapted to hold an ampoule in position therein and disposed at equal intervals around the periphery of said supply disc;

means coupled to said transport drum and supply disc for driving the transport drum and the supply disc in predetermined directions, the rates of rotation of the transport drum and the supply disc and the pitches of the nozzles and pockets respectively thereof being such that nozzles on the transport drum successively arrive at a meeting point between the transport drum and the supply disc such that a nozzle and an ampoule supported within said pocket are in alignment;

means coupled to said supply disc for holding ampoules in the pockets while the ampoules are being transported to the meeting point, ampoules being released therefrom at said meeting point;



means operatively positioned for transferring an ampoule from said supply disc to said transport disc at said first meeting point so that the nozzle is inserted into the mouth of the ampoule, and comprised of means for supplying a fluid under pressure for pushing each ampoule from its pocket toward the nozzle;

means operatively positioned for supplying cleansing fluid to the nozzles of the transport drum during a cleansing stage which occurs along a portion of their rotatory path;

means positioned a predetermined distance from the transport drum for preventing ampoules from falling off the nozzles during their travel in the cleansing stage; and

means operatively positioned for removing an ampoule from the nozzle of the transport drum after said ampoule has passed through the cleansing stage on the transport drum.

3,861,410

ALL-WEATHER PARASOL

Guy Henri Cognet, Boulevard Pierre Gagnaire, 63 Saint Remy sur Durolle, France

Filed May 21, 1973, Ser. No. 362,015

Int. Cl. A45b *19/00*

U.S. Cl. 135—20 R **9 Claims**

1. A parasol comprising:

an upright mast defining an axis;

a hub rotatably carried atop said mast;

a planar array of radial rods secured to said hub;

a plurality of like flexible elongated, angularly separated synthetic-resin flat spatulate petal-shaped members individually fixed to respective ones of said rods and angularly arrayed around said hub, each of said members having a radially inner end secured to said hub and longitudinal edges spaced from the corresponding edges of neighboring members on either side thereof, said rods terminating short of the outer ends of said members and

lying centrally thereof; and

a synthetic-resin disk overlying said inner ends and said hub.

3,861,411

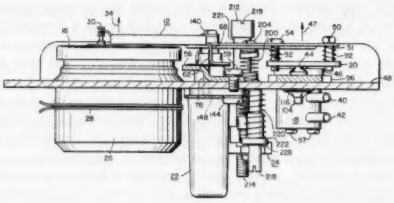
ELECTRO-PNEUMATIC TRANSDUCER

Wayne D. Mitchell, and Paul T. Metzger, both of Rochester, N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 11, 1974, Ser. No. 432,511

Int. Cl. G05d *16/00;* **F16b** *5/00*

U.S. Cl. 137—82 **14 Claims**



1. A transducer comprising:

lever means, including a lever beam, mounted for pivotal movement about a fulcrum, and a planar baffle plate extending from said lever means at one end;

electromagnetic means coupled to said lever beam at the other end;

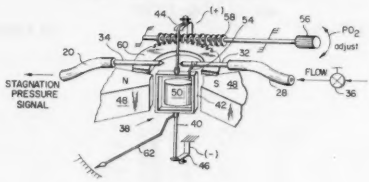
pneumatic means pneumatically coupled to said lever means, including a nozzle assembly for applying pressurized air through an opening therein against a planar surface of said baffle plate, wherein the open end of said nozzle assembly lies in a plane adjacent to said planar surface, said pneumatic means also includes an output for providing a pneumatic indication that is a function of the back pressure created by the air flow from said nozzle opening against said planar surface, and

alignment means, including a plurality of screw devices, for mounting said baffle plate to said lever beam and for adjusting the position of said planar surface of the baffle plate relative to the plane of the nozzle opening so that when said lever beam pivots to cause said planar surface to engage said nozzle opening the planes of said planar surface and said nozzle open end are aligned to provide minimum leakage therebetween.

3,861,412
PROPORTIONAL CONTROL CLOSED CIRCUIT GAS ADMISSION SYSTEM

Lewis W. Fleischmann, 8502 Allenwood Rd., Randallstown, Md. 21133

Filed Aug. 8, 1972, Ser. No. 278,725
Int. Cl. A62b 7/02; F16k 31/12
U.S. Cl. 137—83 **14 Claims**

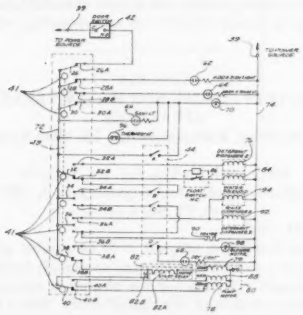


1. Control apparatus comprising nozzle means for producing a jet of fluid, receiver means spaced from said nozzle means for receiving said fluid, jet directing means including a surface supported for turning movement about an axis intersecting said jet and engaging said jet between said nozzle means and said receiver means at varying angles relative to the flow direction of said jet from said nozzle means for varying said flow direction relative to said receiver means and thereby varying the fluid pressure in said receiver means, and output means responsive to the fluid pressure in said receiver means, said directing means including means responsive to said output means for turning said surface, said surface being provided by a taut band, the length of which is along said axis, and said directing means including means for twisting said band about its length to vary the angle of said surface relative to said flow direction.

3,861,413
INDICATING DEVICE FOR A DISHWASHER

Harold L. Woehler, Herrin, Ill., assignor to Fedders Corporation, Edison, N.J.

Filed Jan. 28, 1974, Ser. No. 436,859
Int. Cl. F16k 49/00; H01h 7/00
U.S. Cl. 137—334 **13 Claims**



1. An automatic dishwasher having a wash chamber adapted to receive articles to be cleaned,

a. a plurality of electrically operated elements to perform at least two cleaning cycles upon articles received in the chamber;

b. selectively operable timing means movable to select a desired number of cleaning cycles for operating said electrically operated elements in a predetermined sequence to effect operation of said dishwasher through said desired number of cleaning cycles; and

c. indicating means operable by said timing means during all cleaning cycles preceding the last cleaning cycle for indicating that said last cleaning cycle has not been initiated, whereby additional articles may be added to said chamber prior to the start of said last cleaning cycle.

7. An automatic dishwasher having a wash chamber adapted to receive articles to be cleaned comprising:

a. a plurality of electrically operated elements for performing at least two sequential cleaning cycles upon articles received in said chamber;

b. selectively operable timing means movable to select a desired number of cleaning cycles for connecting said electrically operated elements in a predetermined sequence with a source of power to control said dishwasher through a complete cycle of operation; and

c. a plurality of indicating means for indicating operations performed by said dishwasher,

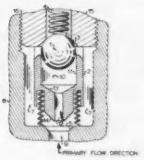
i. a first of said plurality of indicating means being operable to indicate a cleaning cycle is being performed by said dishwasher,

ii. said first indicating means comprising operating means cooperable with said timing means for operating said first indicating means during all cleaning cycles preceding the last cleaning cycle performed by said dishwasher.

3,861,414
BI-DIRECTIONAL FLOW STOP VALVE

William Donald Peterson, II, 1996 East 4675 South, Salt Lake City, Utah 84117

Filed Oct. 4, 1972, Ser. No. 294,887
Int. Cl. F16k 17/26
U.S. Cl. 137—512.3 **3 Claims**

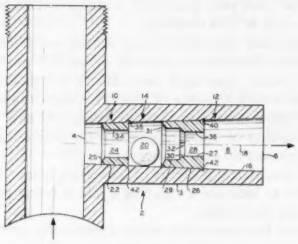


1. A flow control valve comprising a valve body having an inlet, an outlet and a fluid passage for a flow of fluid therethrough,

a ball housing disposed in said fluid passage, said ball housing having a chamber with a check ball disposed therein, said ball housing further having an orifice integral therewith and directly in line with said inlet to provide a communication between said fluid passage and said chamber, said check ball being movable, by a pressure exerted thereon, against a spring to engage a check ball seat formed on said outlet, said pressure being created by said fluid accumulated in said chamber,

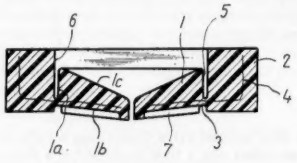
a valve seat formed by said inlet and a valve plug formed by an end of said ball housing proximate said orifice, said ball housing being movably secured to said valve body to allow said valve plug to engage said valve seat to stop fluid flow under conditions of fluid backflow through the valve.

3,861,415
FLOW ACTUATED AUTOMATIC VALVE
Olaf E. Larsen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Dec. 19, 1972, Ser. No. 316,528
Int. Cl. F16k 15/04
U.S. Cl. 137—513.5 18 Claims



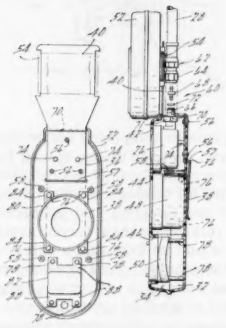
11. A flow actuated valve, comprising:
a valve body having first and second ends and a passageway having first, second and middle portions extending therethrough;
a ball positioned in said middle portion of said valve passageway;
means for preventing said ball from passing through said first end portion of said passageway; and a ball seating element positioned in said second end portion of said passageway, said seating element having an interrupted annular seating surface mateable with an outer surface of said ball for receiving said ball, said ball seating element having an annular flange extending outwardly therefrom, said flange having a sharp angular edge and having a diameter larger than the diameter of said passageway adjacent said ball seating element.

3,861,416
HEART VALVE
Otto Wichterle, Praha, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Praha, Czechoslovakia
Filed Jan. 29, 1973, Ser. No. 327,440
Claims priority, application Czechoslovakia, Feb. 1, 1972, 61772-72
Int. Cl. F16k 15/14
U.S. Cl. 137—525.3 12 Claims



1. A valve for regulating the flow of fluid in a body passage, comprising a valve body having an outer peripheral ring portion surrounding an interior flow passage defining a valve body inner wall and at least two interior flap portions pivotal in response to the flow of fluid therethrough, said flaps comprising a substantially polygonal shape having flexible edge portions shaped to cooperate with each other to jointly close the interior passage of said valve body when said flaps are pivoted in one direction and to open the interior passage of said valve body when said flaps are pivoted in the other direction, each of said flaps being pivotally secured to the inner wall of said peripheral ring along an axis represented by chords of said ring and having stop means located adjacent thereto for engagement with the wall of the ring portion for limiting movement of said flap to maintain said flaps closed in response to flow of fluid in the one direction.

3,861,417
INSTRUMENT CONSOLE FOR UNDERWATER DIVING APPARATUS
Gerald W. Rowe, 3280 Fort St., Lincoln Park, Mich. 48146
Filed Jan. 23, 1974, Ser. No. 435,884
Int. Cl. F16k 37/00
U.S. Cl. 137—557 21 Claims

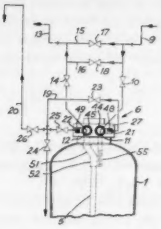


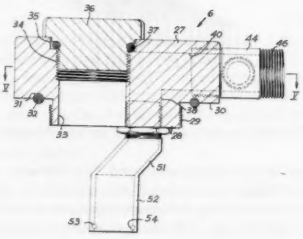
1. In underwater diving apparatus for a user thereof, said apparatus including breathing apparatus comprising a supply of compressed air and means for permitting the user to draw air for breathing from said supply, a sensing and indicating means, coupling means having one end connected to said breathing apparatus and another end connected to said sensing and indicating means for operatively coupling said sensing and indicating means with said breathing apparatus such that said sensing and indicating means can sense and indicate to the user a condition existing in said breathing apparatus: a sensing and indicating means mounting means at said another end of said coupling means, and at least one additional sensing and indicating means mounted on said mounting means.

3,861,418
CONNECTION FITTING FOR WATER TREATMENT APPARATUS
Raoul C. Dujardyn, Rollegemsestraat 25, 8500 Kortrijk, Belgium
Filed May 2, 1973, Ser. No. 356,379
Claims priority, application Belgium, July 3, 1972, 52017
Int. Cl. B01d 41/00
U.S. Cl. 137—590 1 Claim

1. Connection fitting adapted to be removably attached in an opening in a water treatment tank to provide for filling with water treatment products and for placing in communication with a supply conduit of nontreated water, with a discharge conduit for treated water and with a drain, said connection fitting comprising a body having a top wall, a bottom wall and a side wall and with first, second and third passages, said first passage extending eccentrically between the bottom and top walls of said body and being adapted to removably receive a closure plug, said second and third passages being mutually parallel and being L-shaped with a first branch extending to the side wall of said body and prolongated with a tube-shaped part adapted to be removably connected to said supply and discharge conduits and with a second branch extending to the bottom of said body, the second branch of one of said second and third passages being prolongated by a tube-shaped part at

least the free end of which is located in the center of said body, and said tubular parts prolongating said first branches





being each provided with a lateral tubular extension adapted to be removably attached to said drain.

3,861,419

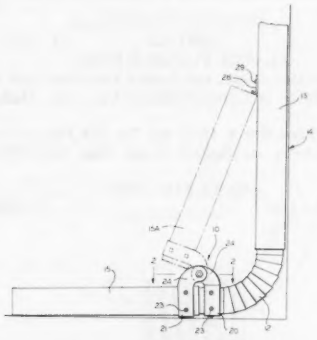
HINGED EXTENSION FOR RAIN-PIPE DOWNSPOUTS

Paul J. Johnson, 2100 Marine Plaza, Wauwatosa, Wis. 53202

Filed May 1, 1974, Ser. No. 466,017

Int. Cl. F16l *27/00*

U.S. Cl. 137—615 **7 Claims**



1. Apparatus for pivotally joining a rainpipe downspout to an extension pipe, said apparatus comprising:

hinge means coupled to said downspout and said extension pipe for enabling said extension pipe to be pivoted between a first position in which said extension sealingly engages said downspout and a second position in which said extension extends generally transverse to said first position, said hinge means comprising first and second bracket means coupled to said downspout and extension respectively and a hinge pin pivotally joining said first and second bracket means,

each of said first and second bracket means having a generally U-shaped configuration receiving said downspout and extension therein, respectively, the sides of each said bracket means having exposed portions extending beyond the periphery of said downspout and extension, and

said hinge pin extends generally perpendicular to the longitudinal axis of said extension pipe and coupled to the exposed portions of said bracket sides.

3,861,420

FLUID CONTROL VALVE

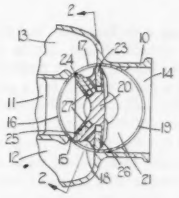
Arthur Leslie Lloyd, and Dereck Roger Beasley, both of Wolverhampton, England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed Apr. 11, 1973, Ser. No. 349,963

Claims priority, application Great Britain, Apr. 19, 1972, 18207/72

Int. Cl. F16k *11/02*

U.S. Cl. 137—625.43 **4 Claims**



1. A valve for fluids, comprising a housing having a cylindrical bore, four ports opening into said bore and respectively providing, in use, an inlet connection, two outlet connections and an exhaust connection, a control member mounted for pivotal movement about the axis of said bore, said control member including a body and four sealing elements slidably mounted on said body and engageable with the wall of said bore so as to define a plurality of spaces between said wall and said control member, said control member being movable between a first position in which said ports are isolated from each other and a second position in which one pair of said ports is interconnected by one of said spaces and another pair of said ports is interconnected by another of said spaces, and four passages in said body communicating with faces on respective ones of said elements remote from said wall, the passages associated with the elements which in said first position isolate said inlet connection communicating with said inlet connection, and the passages associated with the elements which in said first position isolate said exhaust connection respectively communicating, in said first position, with said outlet connections.

3,861,421

PINCH TUBE FAUCET

Arthur D. Thompson, London, Ontario, Canada, assignor to Emco Limited, London, England

Filed Jan. 11, 1974, Ser. No. 432,508

Int. Cl. F16k *11/18*

U.S. Cl. 137—636.4 **2 Claims**

1. A mixing faucet comprising

a body,

a first flow path in said body having an inlet end,

a second flow path in said body having an inlet end,

said first flow path and said second flow path merging with each other and continuing in an outlet flow path to an outlet,

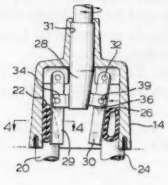
an elongated cam reciprocable and rotatable with respect to said body,

two flexible tubes each forming a portion of one of said flow paths, and being restrained against movement radially of

the longitudinal axis of said cam with respect to said body and disposed on opposite sides of said cam,

two levers, one for each of said tubes, each pivotally mounted to said body, said levers being on opposite sides of said cam surface, each of said levers being pivotable to engage with and compress its respective tube,

two cam followers, one for each of said levers, each of said cam followers being pivotally mounted on its respective lever between the pivotal mounting of the lever and the point of engagement of the lever with its tube, said cam



followers having a surface that makes a line of contact with the cam surface of said cam as said cam is moved longitudinally or rotatably with respect to said casing,

said cam having a cross-section for a portion of its extent adapted to cause said cam followers to move in opposite directions upon rotation whereby to pivot said levers and compress said flexible tubes to proportion flow through said first path and said second path, said cam having a longitudinal cross-section to cause said cam followers to compress said tubes to control the volume of flow through said first flow path and said second flow path.

3,861,422

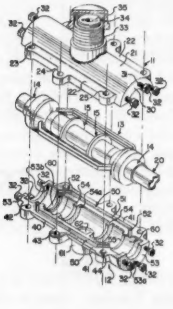
SPLIT-SLEEVE PIPE DEVICE

Joe William Christie, 1118 E. Main St., Frisco, Tex. 75034

Filed Oct. 24, 1973, Ser. No. 409,049

Int. Cl. F16l *41/06*

U.S. Cl. 138—99 **10 Claims**



2. A split-sleeve type pipe device comprising

a first housing-half member,

a second housing-half member securable with said first housing-half member for forming a complete housing enclosure around a portion of a length of a pipe,

electrical insulating means for encircling said pipe within said housing-half members spacing said half members from said pipe, and

integral one-piece pressure sealing gasket means around said pipe within said housing-half members for sealing against fluid pressure loss from said housing enclosure along a length of said pipe,

the gasket means including annular end portions each having an inwardly facing conical seal surface for engagement with a corresponding seal surface in each of said housing-half members and longitudinal runners along opposite sides of the annular end portions connecting said end portions for sealing between said housing-half members along longitudinal lines whereby a longitudinal portion of said pipe is sealed against fluid loss within said housing enclosure between said end portions of said gasket means.

3,861,423

COLLAPSIBLE FLUID CONDUIT

Lee M. Hedges, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Division of Ser. No. 144,185, May 17, 1971,. This application Dec. 18, 1972, Ser. No. 316,150

Int. Cl. F16l *11/00*

U.S. Cl. 138—119 **4 Claims**

1. A flexible conduit which can be axially collapsed comprising:

a. inner, intermediate, and outer flexible walls, said inner wall defining the enclosed passage of said conduit, said outer wall defining the external surface of said conduit, at least one of said walls being fluid impervious,

b. a plurality of unitary wire stiffening loops which retain a permanent set upon being bent disposed intermediate said inner wall and said intermediate wall, said stiffening loops being adjacent and bonded at spaced-apart locations to at least one of said inner and intermediate walls, said stiffening loops lying in planes substantially perpendicular to the longitudi al axis of said conduit whereby radial collapse of the conduit is prevented,

c. a layer of thermal insulation between said intermediate wall and said outer wall, and

d. collars at the ends of the conduit for facilitating the connection of said conduit to adjacent conduits.

3,861,424

ELASTIC FLEXIBLE HOSE

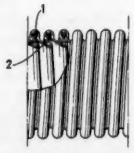
Tadashi Mizutani, Osaka, and Soshiro Ono, Osa, both of Japan, assignors to Kuraray Plastics Co., Ltd., Osaka-shi, Japan

Filed May 8, 1973, Ser. No. 358,285

Claims priority, application Japan, May 11, 1972, 47-55185[U]

Int. Cl. F16l *11/08*

U.S. Cl. 138—119 **8 Claims**



1. In a selectively extendable and contractible flexible hose comprised of a thin tubing made of soft synthetic resin defining an elongated passageway therein, and spiral reinforcement means made of hard synthetic resin coupled to said thin tubing and spirally wound about said elongated passageway, the improvement wherein:

the thickness of said tubing is tapered between maximum and minimum thickness portions always in one direction between adjacent turns of said spiral reinforcement means so that the tubing is bendable inwardly to form pleats of foldable resin material when the hose is in its contracted state, said pleats including in the direction of the axis of the hose toward the thinner ends of the tapers and extending folded along the inner surface of said hose in the vicinity of the spiral reinforcement means with the hose in its contracted state; and

said thin tubing having a substantially plain inner surface.

3,861,425

COATING COMPOSITION

Vincent De Paul Clark, Heath, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 205,288, Dec. 6, 1971, , which is a continuation-in-part of Ser. No. 862,040, Sept. 29, 1969,. This application Sept. 17, 1973, Ser. No. 398,043

Int. Cl. F16l *9/14*

U.S. Cl. 138—149 **4 Claims**

1. The combination of a duct having an air conducting passageway defined by one surface of a layer of fibrous glass insulation and a smooth, flexible coating covering said surface of said insulation, wherein said coating consists essentially of:

a. 70 to 90 percent of a flame retardant filler selected from the group consisting of aluminum hydrate or magnesium hydrate or a combination thereof;

b. 5 to 20 percent of a binder selected from the group consisting of vinyl acrylic latex or polyethylene vinyl acetate latex or a combination thereof; and

c. 1 to 10 percent of a water soluble fire retardant borate selected from the group consisting of sodium borate or boric acid or a combination thereof.

3,861,426

APPARATUS FOR WEFT SUPPLY CONTROL

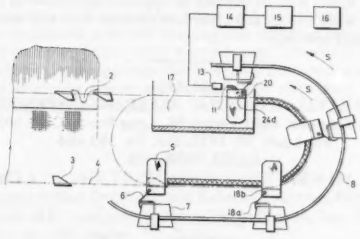
Peter Musil; Frantisek Bucil; Karel Spatenka, and Miroslav Rysavy, all of Usti Nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed June 4, 1973, Ser. No. 366,640

Claims priority, application Czechoslovakia, June 12, 1972, 4058-72

Int. Cl. D03d *47/26*, *51/34*

U.S. Cl. 139—12 **6 Claims**



1. Apparatus for controlling the weft supply into the weft inserters of a travelling-wave warp shedding weaving machine wherein weft supply units follow an endless path which is partly common with an endless path of the weft inserters, comprising detectors mounted on the weft thread being supplied, said detectors having (movable) deflectable control means, a scanner for scanning a signal from the detector the path of motion of said control means, when deflected, being directed through a scanning zone of the scanner for scanning a signal from the detector, said scanner being supported by the weaving machine frame within a section of the path of the weft supply units lying between the point where the weft supply units and the weft inserters diverge from each other, and a drive for the weaving machine, a control device for controlling the weaving machine drive, and means operatively connecting the scanner to the control device so as to stop the drive of the weaving machine before an incorrectly weft-filled inserter has entered the warp shed.

3,861,427

CARRIERS FOR WEFT INSERTION BY THE RAPIER PRINCIPLE WITH POSITIVE GRIPPING FOR SHUTTLELESS LOOMS

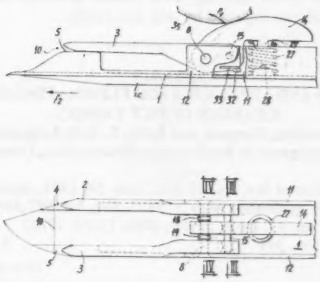
Georges Schedecker, Mulhouse, France, assignor to Societe Alsacienne De Constructions Mecaniques De Mulhouse, Mulhouse Cedex, France

Filed Oct. 16, 1973, Ser. No. 406,868

Claims priority, application France, Oct. 17, 1972, 72.36658

Int. Cl. D03d *47/20*

U.S. Cl. 139—122 N **8 Claims**



1. A carrier for weft insertion by the rapier principle in a shuttleless loom, said carrier mounting two independent gripper units; and a differential control system including operating means including a single force-transmitting means including means for equalizing the gripping force of the two gripper units and which is operatively connected to said two gripper units whereby gripping forces of the gripper units on a weft thread are equalized irrespective of weft thread imperfections.

3,861,428

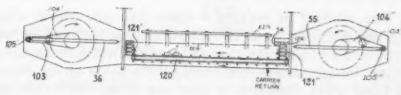
WEFT-INJECTION SYSTEM FOR SHUTTLELESS LOOM

Georges Conte, Villeurbanne-Rhone; Pierre Royer, Vaulx-en-Velin-Rhone, and Edmond Narboux, Bron-Rhone, all of France, assignors to Mecoutil Societe a Responsibilite Limitee, Anatole, France

Filed May 30, 1973, Ser. No. 365,077

Int. Cl. D03d *47/12*

U.S. Cl. 139—126 **10 Claims**



1. In a loom having shed-forming means for a set of warp threads on a frame and a supply of weft threads on one side of the set, the combination therewith of:

a first lance reciprocably mounted on said frame for introduction into the shedded warp threads from said one side to substantially the middle of the shed;

a second lance reciprocably mounted on said frame for introduction into the shedded warp threads from the opposite side to substantially the middle of the shed;

a plurality of weft carriers each provided with weft-gripping means, each weft carrier having first coupling means engageable by said first lance for insertion thereby from said one side into the shed and second coupling means engageable by said second lance for extraction thereby from the shed at said opposite side;

drive means for simultaneously reciprocating said lance in opposite directions and in aligned relationship with momentary simultaneous engagement of a weft carrier by both lances substantially midway of the shed, said second coupling means overriding said first coupling means whereby the weft carrier remains engaged with said second lance upon subsequent separation of said lances;

release means at said opposite side for detaching an oncoming weft carrier from its weft and from said second lance;

transport means on said frame for conveying the detached weft carrier from said opposite side around said set of warp threads to said one side; and

loading means at said one side for attaching a fresh weft thread to an arriving weft carrier prior to insertion thereof into the shed by said first lance.

3,861,429

METHOD AND APPARATUS FOR ELIMINATING STATIC CHARGES IN PILE FABRIC

Ed B. Broadrick, Glasgow, and Ralph T. Reid, Lexington, both of Va., assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation of Ser. No. 49,460, June 24, 1970, abandoned. This application May 7, 1973, Ser. No. 357,580
Int. Cl. D03d *27/00*; D05c *15/34*, *17/02*
U.S. Cl. 139—391 **4 Claims**

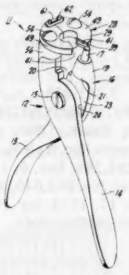
1. The method of making a static-free pile fabric which comprises feeding a series of electrically conductive filaments directly into a pile forming zone of a pile fabric manufacturing machine, independently controlling the tension of the electrically conductive filaments as they are being fed to the pile forming zone, separately and simultaneously feeding a series of non-conductive yarns to said pile forming zone alternately between the electrically conductive filaments, and forming rows of pile projections at said zone with said conductive filaments and said respective non-conductive yarns in the same selected rows of pile projections, the filaments and the respective non-conductive yarns being untwisted with respect to each other as they form each of said pile projections.

3,861,430

WIRE FORMING HAND TOOL

Elwin G. Story, Santa Rosa, Calif., assignor to Charles F. Lyons, Olympic Valley, Calif., a part interest

Filed Nov. 5, 1973, Ser. No. 412,729
Int. Cl. B21f *1/00*
U.S. Cl. 140—106 **2 Claims**



1. A wire forming hand tool comprising:

a. a pair of pliers with pivoted handles carrying two jaws for relative movement in a single plane toward and away from each other in response to hand action;

b. A die head mounted on one of said jaws, said die head including substantially crescent-shaped plate means divided into two portions arranged in mirror symmetry on each side of said single plane, each of said plate portions being pivotally mounted on said one of said jaws, on respectively spaced axes, for pivotal movement in a plane perpendicular to said single plane, said crescent-shaped plate means defining a central opening having boundary walls forming an anvil divided on said single plane and a generally V-shaped channel extending from said central opening toward the other of said jaws, said channel being defined by an opposed pair of rectilinear side walls having elongated rectilinear guide grooves formed therein to receive and align a wire located in said grooves; and,

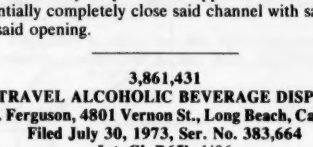
c. a die pin of substantially circular cross section mounted on said other of said jaws for movement through said channel in said single plane toward said central opening, said channel side walls and said guide grooves converging inwardly at an acute angle, said pin being movable to a position entirely within said central opening whereby said die heads may be pivoted in opposite directions to substantially completely close said channel with said die pin in said opening.

3,861,431

AIR TRAVEL ALCOHOLIC BEVERAGE DISPENSER

Scott M. Ferguson, 4801 Vernon St., Long Beach, Calif. 90815

Filed July 30, 1973, Ser. No. 383,664
Int. Cl. B65b *1/06*
U.S. Cl. 141—364 **4 Claims**



1. A container-dispenser for an alcoholic beverage, comprising a hollow fluid tight body adapted to contain a body of an alcoholic drink provided with a bottom having a central opening, a top having a central internal tubular protrusion aligned with and extending toward the central opening in the

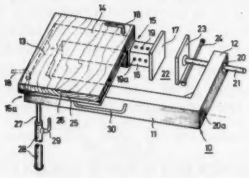
bottom, the top and bottom being joined at their peripheries, the body having adjacent the juncture of the top and bottom a peripheral depending flange tapering inwardly, said flange being adapted to engage the surface of the rim of a drink glass, the hollow body being thereby enabled to serve as a cover for the drink glass, and a hollow valve slidably fitting the tubular protrusion and the central opening in the base and having a side port normally covered and sealed against liquid flow by the tubular protrusion, translation of the valve causing the port therein to be uncovered by the tubular protrusion, thus permitting the alcoholic drink within the hollow body to flow from the hollow body into the drink glass by way of the port and interior of the valve.

3,861,432

WORK TABLE FOR CLAMPING AGAINST PLANAR SURFACES

Gunter Rothenberger, Landgraf-Friedrich-Strasse 21, D-6380 Bad Homberg, Germany

Filed Oct. 29, 1973, Ser. No. 410,871
Int. Cl. B25h *1/04*
U.S. Cl. 144—286 R **9 Claims**



1. A work table for clamping against planar surfaces comprising, in combination, a substantially open-loop-shaped frame member; a work plate on said frame member; two clamping plates arranged on said frame member with at least one clamping plate being movable with respect to the other plate, said frame member having two insertion openings for mounting one of said clamping plates in opposite directions, the other one of said clamping plates having a threaded spindle; two threaded screw means for receiving and mounting said spindle of said other clamping plate, each of said screw means corresponding to one respective insertion opening, each screw means and respective insertion opening being spaced directly across from each other, said clamping plates being movable toward each other for applying clamping forces directed toward each other when said clamping plates are in one respective insertion opening and threaded screw means, said clamping plates being movable away from each other for applying clamping forces directed away from each other when said clamping plates are in the other respective insertion opening and screw means.

3,861,433

AIR TIGHT FOOD CONTAINER

Jacques Schier, Deerfield, and Robert W. Graves, Park Forest, both of Ill., assignors to Plastofilm Industries, Inc., Wheaton, Ill., by said Graves

Filed Sept. 17, 1973, Ser. No. 398,212
Int. Cl. B65d *11/02, 11/10*
U.S. Cl. 150—.5 **19 Claims**

1. A container for the shipment and storage of comestible products to retain said products sealed from the ambient atmosphere thereby to preclude contamination from organisms and other deleterious agents present in the atmosphere and to provide extended shelf life for products contained and held in said package,

said container comprising, in combination, a dish-like base, and a cover for support on and sleeved over said base in hermetically sealing frictional securement therewith,

said base constituting

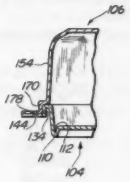
a molded dish of thin, self-supporting material and including a floor,

wall means including an inner principal product-retention wall extending generally upwardly of said floor and integrally formed therewith to provide a unitary one-piece structure,

said wall means being reversely curved upon itself at an upper extremity thereof to define a circumambient ridge, a skirt-like auxiliary wall constituting a container sealing wall depending downwardly from said ridge and spaced radially outwardly from said product retention wall and extending therearound,

said container sealing wall terminating on a circumferential line along a locus intermediate the vertical expanse of said product-retention wall in an integrally formed peripheral ledge continouus with said container sealing wall and projecting outwardly therefrom in a generally horizontal plane;

said cover constituting an upwardly vaulted closure element of thin, self-supporting plastic material, said cover being dimensioned for attachment to said base in contiguous frictional engagement therewith, said cover including



a top wall,

a side wall integrally formed with said top wall and depending downwardly therefrom around the periphery thereof, a lower marginal portion of said side wall constituting a smooth-surfaced upstanding substantially vertical endless band for frictional securement to said container sealing wall of said base in overlying contiguous abutment thereagainst and encircling the periphery thereof to define an air-tight seal between said cover and said dish, and

a flange integral with and extending horizontally outwardly from and substantially normally to said band around the entire perimeter of said cover,

said flange of said cover seating flatly on said ledge of said base when said cover is in place on said base to close said container, and

finger-grip tabs integrally formed with and extending laterally outwardly from each said ledge of said base and said flange of said cover,

said tabs being circumferentially offset from one another to facilitate the grasping thereof to pull said base and said cover apart.

3,861,434

MAGNETICALLY ATTACHED COVER FOR A GOLF CLUB

Joseph J. Harding, 300 W. Franklin St., Richmond, Va. 23220

Filed Sept. 7, 1973, Ser. No. 395,160
Int. Cl. A63b *57/00*
U.S. Cl. 150—52 G **6 Claims**

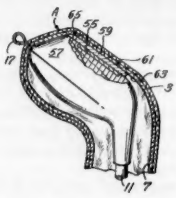
6. A magnetically attached cover for a golf club having a ferrous metal portion, comprising:

a sock of flexible, pliable, non-metallic material having a foot portion for receiving the head of a golf club;

a toe portion closing one end of said foot portion;

a tubular leg portion for enclosing the lower end of the shaft of the golf club and having one end connected to the other end of said foot portion; and

permanent magnet means carried by the inner surface of the foot portion of said cover and adapted to be disposed

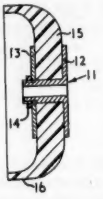


adjacent the ferrous metal portion of said golf club for magnetically attaching said cover to said golf club.

3,861,435
WHEELS

Frederick Reginald Vincent, Cannan, and Brian Auty, Bath, both of England, assignors to Bath Institute of Medical Engineering, Somerset, England

Filed Feb. 13, 1973, Ser. No. 332,219
Claims priority, application Great Britain, Feb. 16, 1972, 7289/72
Int. Cl. B60b *3/00*
U.S. Cl. 152—5 **10 Claims**



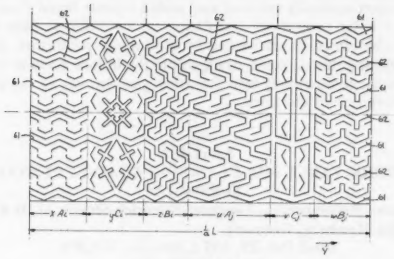
1. A wheel comprising a hub and an outer ground engaging member, said outer member being of a generally dish shape, tapered in thickness towards its outer periphery and formed from a flexible elastomeric material, the cross-sectional shape of the outermost surface of said outer member being elliptical, whereby said outer member is capable of deflecting to increase the area of surface contact between said outer member and the ground in response to an increase of load upon said wheel.

3,861,436
PNEUMATIC TIRE TREAD

Dionysius Josef Poque, Aachen-Brand, Germany, assignor to Uniroyal A.G., Aachen, Germany

Filed Oct. 19, 1973, Ser. No. 408,210
Claims priority, application Germany, Nov. 2, 1972, 2253717
Int. Cl. B60c *11/06*
U.S. Cl. 152—209 R **7 Claims**

1. A tread for a pneumatic tire, said tread comprising; a first group of at least three different adjoining sections extending adjacent to one another side-by-side in circumferential succession, each of said sections over the entire extent of said tread including a respective tractive means in the form of projections and grooves different in size and configuration from the others of said sections immediately adjacent thereto on each side thereof for responding to a road-surface condition with a degree of traction different from the others of said sections immediately adjacent thereto on each side thereof, said tractive means of each of said sections defining at least one circumferential groove which continuously communicates with a corresponding groove in every other section and closes upon itself over the circumferential extent of said tread; and a second group of at least three different adjoining sections each of which corresponds to a respective section of said first group, each section of said second group which corresponds to a respective section of said first group having substantially

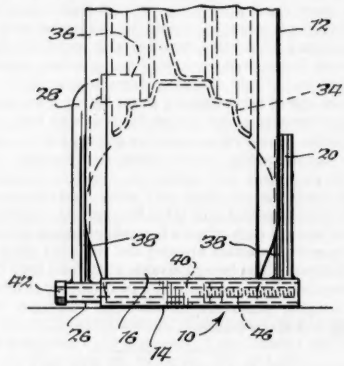


similar circumferential grooves as its corresponding section but differing from its corresponding section in the presence or absence therefrom of at least one groove intercommunicating its circumferential grooves with one another laterally of said tread, each of said corresponding sections being separated from one another by at least two other non-corresponding sections over the entire circumferential extent of said tread.

3,861,437
TRACTION DEVICE FOR VEHICLE TIRES

John C. Belknap, 229 S. Shore Dr., Buffalo, N.Y. 14219

Filed Aug. 23, 1972, Ser. No. 283,224
Int. Cl. B60c *27/02*
U.S. Cl. 152—225 C **12 Claims**

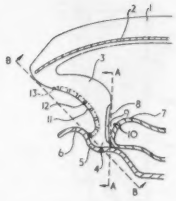


1. A traction device for use with a vehicle tire mounted on a rim comprising: a tubular shoe element engageable with the peripheral surface of a vehicle tire and extending there-across; a tubular member telescopically received in said shoe element and projecting axially outwardly of said shoe element; a first rod attached at one end adjacent the outer end of said shoe element; a second rod attached at one end adjacent the outer end of said tubular member; said rods extending substantially normal to said shoe element and said tubular member and being adapted to form therewith a generally U-shaped configuration, said second rod having a bent end portion engagable with said rim and being substantially longer than said first rod; clamping means adjustably connecting said shoe element and said tubular member in telescopic relation to hold said rods against said tire; and gripping means on said shoe element having teeth adapted to engage the peripheral tread of said tire.

3,861,438
PNEUMATIC TIRE FOR VEHICLE WHEELS

Italo Bertelli, and Giorgio Tangorra, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milano, Italy

Filed Mar. 26, 1973, Ser. No. 345,070
Claims priority, application Italy, Mar. 28, 1972, 22465/72
Int. Cl. B60c *13/00, 9/02*
U.S. Cl. 152—353 C **4 Claims**



1. A pneumatic tire for vehicle wheels comprising

a reinforced tread having a given width and side edges and two sidewalls comprising elastomeric material, extending from said tread side edges and terminating in beads for a rigid wheel rim,

wherein said given width of the tread is wider than any other part of the tire and is reinforced over substantially the whole of its width by an annular structure which is substantially inextensible under the tire inflation pressure in both its circumferential and lateral directions, said annular structure extending to at least the midline of said sidewalls and

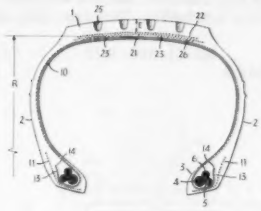
wherein said sidewalls have a cross-sectional shape whose midline over substantially the whole length between the side edges of the tread reinforcement and the bead, is convex with respect to the interior of the tire under the tire inflation pressure, each of said sidewalls having in combination a bending stiffness, curvature and thickness sufficient to constrain the sidewall between said side edges of the inextensible tread reinforcement and the bead seat on the wheel rim whereby on inflation of the tire and under service conditions the sidewalls are placed under compression stress, said sidewalls having at least one end zone with a bending stiffness lower than the stiffness of the remaining zone, further wherein each sidewall comprises a plurality of slits in the inner and the outer surfaces of the sidewalls which may come into contact with other surfaces of the tire or of other elements of the wheel in consequence of the deflation of the tire, said slits being prevailingly oriented in a direction perpendicular to the direction in which the relative slidings between said contact surfaces take place.

3,861,439
LIGHT-WEIGHT HEAVY-DUTY RADIAL TIRE

Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie, Clermon-Ferrand (Puy-de-Dome), France

Filed Dec. 15, 1972, Ser. No. 315,574
Claims priority, application France, Dec. 31, 1971, 71.47885
Int. Cl. B60c *9/08*
U.S. Cl. 152—359 **11 Claims**

1. A light-weight heavy-duty radial tire comprising a tread, a radial carcass formed of at least one carcass ply of cords, and a tread reinforcement formed of at least two tread plies of cords, said cords of said carcass and tread reinforcement being laid in different directions, each separate direction of cords corresponding to a single standard ply or a plurality of submultiple plies equivalent in combination to one standard ply, and the tensile strength T, expressed in kilograms, per centimeter of ply width of at least one of said standard plies being between 5 and 15 times the inner radius R, expressed in

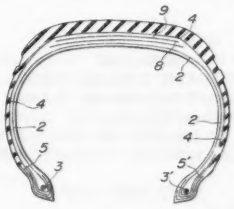


centimeters, of the tire in the median plane, the tire being in an inflated condition but not under load.

3,861,440
SEMI-RADIAL TIRE HAVING BREAKERS DISPOSED BETWEEN ADJACENT CARCASS PLIES

Koichiro Ochiai, and Makoto Takahashi, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 212,437, Dec. 27, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 429,880
Claims priority, application Japan, Dec. 28, 1970, 45-119928
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 R **8 Claims**



1. A semi-radial tire having cord reinforcements, said cord reinforcements consisting of

two rubber coated carcass plies extending between beads, each of said carcass plies consisting of parallel cords, the carcass cords in tire sidewall portions being disposed at an angle of 65° to 82° relative to the equatorial direction of the tire, the cords of the two carcass plies crossing with each other;

a breaker means disposed between adjacent carcass plies at a crown portion of the tire, said breaker means consisting of at least two breaker plies each having parallel cords disposed at an angle of 17° to 30° relative to the equatorial direction of the tire, the cords of the paired breaker plies crossing with each other, the angle of the carcass cords at midcircumferential plane relative to said equatorial direction being intermediate between said breaker cord angle and said carcass cord angle at the tire sidewall portion;

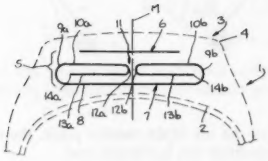
the width of said breaker means in the direction of the axis of rotation of the tire under inflated condition being 55 to 85 percent of the maximum width of the tire in the same direction; and

a rubber layer means covering the outer surface of the tire.

3,861,441
PNEUMATIC TIRE BREAKER ASSEMBLY

Sami Oyoun, Aachen, Germany, assignor to Uniroyal Aktiengesellschaft, Aachen, Germany

Filed May 24, 1974, Ser. No. 473,094
Claims priority, application Germany, July 20, 1973, 2336962
Int. Cl. B60c 9/18
U.S. Cl. 152—361 R 13 Claims

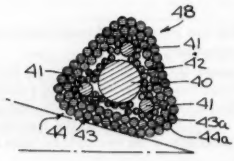


1. A pneumatic tire comprising a carcass having a circumferential crown region, a tread overlying said crown region, and a breaker assembly interposed between said tread and carcass, said breaker assembly comprising a pair of plies at least one of which is folded, said folded ply including two pairs of opposing fold regions, each pair of said fold regions including an axially outer fold and an axially inner fold, each said axially inner fold being spaced proximate to the other said axially inner fold to define an annular gap therebetween, the other of said plies being superposed upon said folded ply and having an axial extent sufficient to bridge said annular gap, said folded ply terminating in a pair of axially opposite marginal edges each of which is concealed between the axially inner fold and the axially outer fold of its corresponding pair of fold regions.

3,861,442
PNEUMATIC TIRE BEAD RING

Marcel J. Bertrand, Grivegnee-Liege, Belgium, assignor to Uniroyal AG, Aachen, Germany

Filed Jan. 26, 1973, Ser. No. 326,889
Claims priority, application Germany, Feb. 1, 1972, 2204746
Int. Cl. B60c 15/04
U.S. Cl. 152—362 R 4 Claims

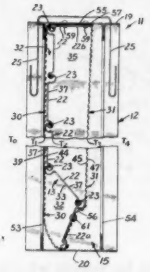


1. A tubeless pneumatic tire including a carcass, a tread, and a pair of bead rings adapted to be firmly seated on the shoulders of a wheel rim, each bead ring comprising:
a circular cross-section wire having a first diameter;
three circular cross-section wires each having a second diameter,
said second diameter being less than said first diameter,
said three second diameter wires being arranged parallel to, and in a generally triangular cinfiguration around said first diameter wire thereby forming a core; and
a plurality of layers of helically wound, closely spaced wires surrounding said core, the wires of each layer being oppositely pitched with respect to the wires of the adjacent layers.

3,861,443
FIRE AND HEAT RADIATION DAMPER

Sherwin S. Tarnoff, Northbrook, Ill., assignor to Air Balance, Inc., Chicago, Ill.

Filed Aug. 3, 1973, Ser. No. 385,475
Int. Cl. E05f 15/20
U.S. Cl. 160—1 7 Claims



1. A fire damper comprising a frame having a pair of side walls and top and bottom walls joined to said pair of side walls and encompassing an opening through which air may flow; a metal curtain wall means associated with said frame and movable from an open damper position permitting air to flow through said opening to a closed position substantially closing the opening in said frame to air flow therethrough, a first radiation shield positioned in a stowage condition leaving said opening exposed and movable therefrom to an effective position for covering said opening, said first radiation shield being disposed on one side of the curtain wall means and generally spaced therefrom when the latter is in its closed position, a second radiation shield positioned in a stowage condition leaving said opening exposed and movable therefrom to an effective position for covering said opening, said second radiation shield being disposed on the opposite side of said curtain wall means and generally spaced therefrom when the latter is in its closed position, and means holding said curtain wall means in said open position and said radiation shields in the stowage condition and operable in response to high temperatures to release said curtain wall means for movement to said closed position and said radiation shields to said effective positions.

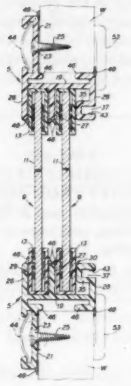
3,861,444
EXTRUDED PLASTIC WINDOW FRAME

Jerry E. Portwood, Columbus, Ohio, assignor to Crane Plastics, Inc., Columbus, Ohio

Filed Nov. 2, 1973, Ser. No. 412,447
Int. Cl. E06b 3/46
U.S. Cl. 160—90 3 Claims

1. In a sliding sash window; a generally vertically arranged, rectangular window frame having inner and outer sides and composed of a pair of relatively spaced apart upright stiles and upper and lower rails miter-joined at the corners of said frame to said stiles, each of said stiles and rails being identical in cross section and each consisting of a generally elongated, integral, synthetic resin extrusion which includes a generally flat, intermediate cross web, a mounting web extending perpendicularly outwardly from said coextensive with said cross web, and a plurality of relatively spaced apart channel-forming webs projecting perpendicularly from and coextensive with the side of said cross web opposite said mounting web; the mounting webs of said stiles and rails defining on said window frame a substantially continuous, outer, marginal mounting flange for said frame, and the channel-forming webs of said stiles and rails defining in said window frame a plurality of relatively offset, inwardly opening sash-receiving channels, one of the channel-forming webs of said stiles and rails having

a return bend thereon defining on the inner side of said window frame a continuous, spline-receiving groove, and the other of the channel-forming webs of said stiles and rails being



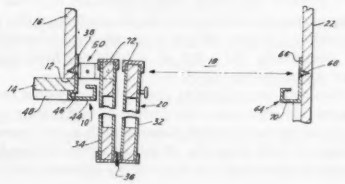
formed with integral, longitudinally coextensive, flexible weather-strips angled inwardly of the channels of said frame for sealing engagement with sash received therein.

3,861,445

DRY WALL TRIM

Benjamin W. Schwindt, 40 Awixa Ave., Bay Shore, Suffolk County, N.Y. 11706

Filed Feb. 7, 1974, Ser. No. 440,594
Int. Cl. E05d *15/26*
U.S. Cl. 160—206 **5 Claims**



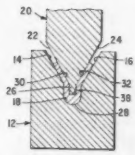
1. In a building installation of the type having in combination: a first dry wall panel; a second dry wall panel disposed transverse to and generally abutting said first panel at a seam; a wall member spaced apart from said seam and cooperating with one of said dry wall panels in defining an opening; roller guide means spanning the top of said opening; door means disposed in said opening, said door means including roller means engaged by said guide; the improvement comprising a first trim member secured to one of said panels having a first portion extending along and covering said seam and a second portion extending into said opening and a second trim member secured to said wall member, said second trim member including a first portion secured to said wall member and a second portion extending into said opening.

3,861,446

METHOD FOR MAKING LATCH NEEDLES

Josef Zocher, Haaren, Aachen, Germany, assignor to The Singer Company, New York, N.Y.

Division of Ser. No. 257,261, May 26, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,949
Int. Cl. B21g *1/10*
U.S. Cl. 163—5 **4 Claims**



1. The method of manufacturing a latch needle comprising the steps of:

a. locating an elongated metallic needle blank in a die;

b. pressing a forming punch into said blank with a force sufficient to cause the metal to flow between the punch and the die to form the exterior surface of said needle and to form a longitudinal recess in the blank;

c. inserting a latch preformed with a pair of oppositely extending protuberances into the recess with each protuberance facing a longitudinal wall of said recess; and

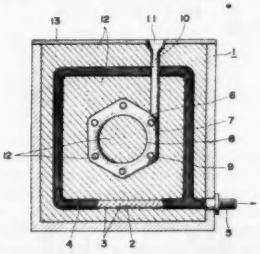
d. fastening the latch in the recess by transversely pressing each of said walls inwardly against the respective protuberance to form a bearing surface in the walls for said latch.

3,861,447

MOLDING METHOD

Masao Hondo, Susaka, Japan, assignor to Kabushiki Kaisha Akita, Susaka City, Japan

Filed Oct. 27, 1972, Ser. No. 301,503
Claims priority, application Japan, Dec. 14, 1971, 46-101264; Dec. 25, 1971, 46-1813; July 3, 1972, 47-66787; July 13, 1972, 47-70233
U.S. Cl. 164—34 **4 Claims**

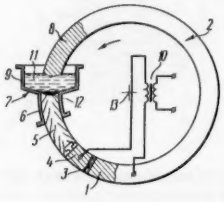


1. A molding method, comprising: embedding both a form made of an instantaneously combustible material, and a gas vent for venting gases formed from combustion of said material, in a mass of heat resistant particulate material contained in a flask; covering the open top of the flask with a plastic film as a lid; inducing a negative or sub-atmospheric pressure in said mass thereby compacting said mass while maintaining the shape of said form; and pouring a molten metal into the form while still inducing said negative or sub-atmospheric pressure the molten metal gassifying said combustible material; and removing resultant gases through said vent.

3,861,448
METHOD OF ELECTROSLAG MELTING OF SEMIANNULAR METALLIC INGOT

Boris Izrailevich Medovar, bulvar Lesi Ukrainki 2, kv. 8; Rudolf Solomonovich Dubinsky, ulitsa Politekhnicheskaya 5, kv. 29; Valery Alexandrovich Prikhodko, bulvar Davydova 7, kv. 158, and Ilya Iosifovich Kumysh, Vozdukhoflotsky prospekt, 42, kv. 51, all of Kiev, U.S.S.R.

Filed Apr. 17, 1973, Ser. No. 351,992
Int. Cl. B22d 27/02
U.S. Cl. 164—52 4 Claims

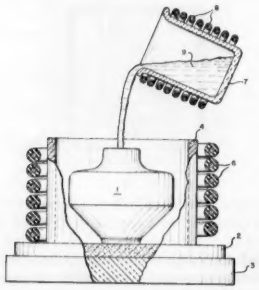


1. A method of the electroslag melting of a semiannular metallic ingot in a cooled mould having an enlarged part to accommodate metal and slag bath and a part adapted to shape the metallic ingot, said method comprising the steps of: introducing a dummy bar into the mould part adapted to shape the metal ingot; fastening one of the ends of a blank being remelted having the form of an unclosed ring to the dummy bar, the other end of the blank being immersed into the enlarged part of the mould; applying voltage fed from a power supply source across the dummy bar and an element acting as an electrode; pouring slag into the enlarged part of the mould until an electric current of a preset magnitude is obtained; and rotating the blank being remelted in a direction in which the ingot is withdrawn and with a speed equal to that of its building-up.

3,861,449
METHOD OF CASTING METALLIC OBJECTS

Robert J. Barbero, Wayne, N.J., assignor to Howmet Corporation, Muskegon, Mich.

Filed May 5, 1969, Ser. No. 821,680
Int. Cl. B22d 27/04
U.S. Cl. 164—65 5 Claims



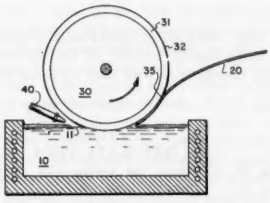
1. A method of casting a metal-containing material to form an object consisting essentially of said metal-containing material, said object having a thin section and a substantially uniform fine grain structure throughout comprising:

a. placing a mold in a chamber that is capable of being evacuated,
b. placing a charge of material to be poured into a heatable crucible in the chamber,
c. evacuating the chamber,
d. heating the mold and controlling the mold temperature in the chamber within a range having an upper limit of about 150°F. above the melting point of the metal-containing material to be poured and a lower range of 200°F. below that melting point,
e. melting the charge in the crucible,
f. controlling the temperature of the melted charge in the range of approximately 50°F. to 100°F. above the melting point of the metal-containing material, and
g. pouring the charge into the mold.

3,861,450
AN IMPROVED METHOD OF FORMATION OF FILAMENT DIRECTLY FROM MOLTEN MATERIAL

Carroll E. Mobley, Columbus, and Robert E. Maringer, Worthington, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Apr. 6, 1973, Ser. No. 348,689
Int. Cl. B22d 11/06
U.S. Cl. 164—66 10 Claims



1. In a method of making solid filamentary material from a pool-like source of molten material by contacting the surface of said molten material with at least one circumferential projection comprising the edge of a rotating, heat-extracting member the improvement of:

maintaining a non-oxidizing atmosphere adjacent the point where said edge enters the surface of said molten material by covering said molten material with a solid cover consisting at least partially of solid carbon disposed to remove oxygen from the atmosphere adjacent said cover.

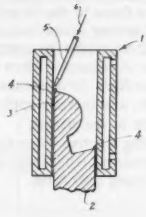
3,861,451
METHOD OF SEALING DUMMY BAR HEADS IN CONTINUOUS CASTING MACHINES

Karl-Heinz Bauer, Dillingen, Saar, and Manfred Weiler, Huettersdorf, Saar, both of Germany, assignors to Concast AG, Zurich, Switzerland

Continuation-in-part of Ser. No. 206,545, Dec. 9, 1971, abandoned. This application July 24, 1973, Ser. No. 382,270
Int. Cl. B22d 11/08
U.S. Cl. 164—82 3 Claims

1. The method of sealing the gap between the walls of a mold cavity and the dummy bar head prior to pouring molten metal into the mold cavity which comprises, inserting the dummy bar head into the mold cavity, and pressing into the

gap between the walls of the cavity and the dummy bar head a pasty mixture of quartz sand and water glass comprising one



part by volume of water glass and from 1.4 to 2.4 parts by volume of quartz sand.

3,861,452

MANUFACTURE OF THIN, CONTINUOUS STEEL WIRES

Jean-Marie Massoubre, Clermont-Ferrand, France, assignor to Compagnie General Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrend (Puy-de-Dome), France

Continuation of Ser. No. 248,569, April 28, 1972, abandoned. This application Nov. 30, 1973, Ser. No. 420,616

Claims priority, application France, May 10, 1971, 71.16882

Int. Cl. B22d *11/12*

U.S. Cl. 164—82 **10 Claims**

1. In the method for the manufacture of a thin, continuous steel wire comprising projecting a jet of liquid steel into a gaseous cooling medium to solidify and fix the jet in cylindrical shape, the improvement which comprises said gaseous cooling medium being an oxidizing cooling medium and said liquid steel being a steel having silicon and manganese contents so selected from the Fe-Si-Mn-O equilibrium diagram that a solid silica precipitate is the oxidation product which is principally formed and acts as a solidification initiator and accelerator.

3,861,453

RECEIVER-TRANSMITTER UNIT FOR PROCESS CONTROL SYSTEM

David G. Grier, Elkins Park; Gerard P. Albright, Hatboro, and David G. Rees, Telford, all of Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Filed Sept. 25, 1973, Ser. No. 400,688

Int. Cl. F15b *5/00*; **G05b** *16/00*

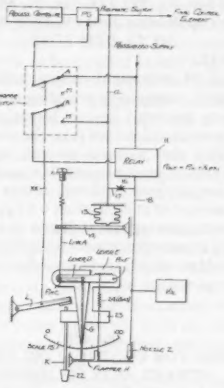
U.S. Cl. 137—85 **11 Claims**

1. A fluid-operated receiver-transmitter unit operable in conjunction with an automatic process control system including a controller which supplies operating fluid to the motor of a final control element, said unit being selectively capable of functioning in three modes, the first mode being a receiver mode in which operating fluid is supplied to the motor of the control element in accordance with a manual operation and independently of said controller, the second mode being a transmitter mode in which operating fluid is supplied to said motor by said controller, the third mode being a preset manual mode in which operating fluid is supplied to said motor at a predetermined level which is independent of said controller and of said manual operation, said unit comprising:

A. means in said receiver mode to translate an incoming fluid signal derived from the system into a receiver position representing the value of the incoming signal,

B. means in said transmitter mode to translate the receiver position into a corresponding transmitter position and to supply to said system an initial fluid output signal representing said transmitter position, whereby a transfer from the receiver mode to the transmitter mode is effected in a bumpless manner, and,

C. means in said preset manual mode to produce a fluid output signal whose value is independent of said transmitter position established in said transmitter mode and is based on a previously established safe value whereby, should the controller fail, one may supply to said system a signal which maintains a safe operation.



3,861,454

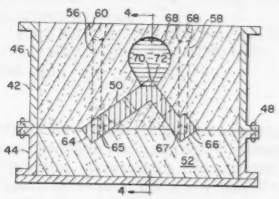
STRUCTURE FOR AND METHOD OF CONSTRUCTING TRIM DIES

Charles C. Mezey, Rochester, Mich., assignor to Full Mold Process, Inc., Lathrup Village, Mich.

Filed Aug. 7, 1972, Ser. No. 278,462

Int. Cl. B22d *23/00*

U.S. Cl. 164—93 **10 Claims**



1. The method of manufacture comprising casting two molten metals having dissimilar properties in different portions of a mold simultaneously to flow the molten metals toward each other and form a fusion therebetween at the intersection thereof whereby an integral casting is formed having parts with different properties, which casting is a trim die section which is substantially L-shaped in cross section to provide base and trim parts and is cast in a mold formed by a die pattern positioned in the mold to form an inverted V in cross section, providing flat portions at the apex of the die pattern used to form the die section, and building riser patterns from the flat portions of the die pattern whereby risers are formed on the die section during casting which risers may be easily flame cut from the die section across similar flat portions on the die section, and gating the mold at the ends of the die section at the low ends of both parts of the cross section thereof whereby the metals flow toward the apex of the inverted L-shaped cross section to form the fusion therebetween at substantially the apex of the L-shaped cross section.

3,861,455
METHOD OF INVESTMENT CASTING A BRIGHT GOLD ALLOY

Clyde E. Ingersoll, Tonawanda, N.Y., assignor to Williams Gold Refining Company Incorporated, Buffalo, N.Y.

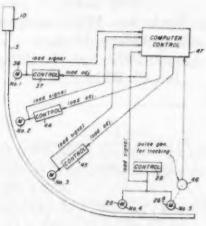
Division of Ser. No. 221,432, Jan. 27, 1972, Pat. No. 3,769,006. This application June 19, 1973, Ser. No. 371,517
Int. Cl. B22d *27/18*
U.S. Cl. 164—122 **9 Claims**

1. A method of investment casting gold alloys at from 1,500° to 2,500° F. comprising providing a melt of gold alloy containing up to about 0.5 percent by weight, based on the total melt, of a material selected from the group consisting of silicon, aluminum and mixtures thereof, said aluminum, if present, being present in an amount of at least 0.02 percent by weight, based on the melt, and said silicon if present being present in an amount of at least about 0.05 percent by weight, based on the melt, pouring said melt into an investment mold, said mold being at a temperature of from 900° to 1,600°F. and cooling said mold to solidify said alloy, whereby a cast product having a lustrous surface is provided.

3,861,456
MECHANISM FOR CONTROLLING FORCES ON A STRAND AS IT SOLIDIFIES

Francis Gallucci, North Huntington Twsp., Westmoreland Cty., and Frank Slamar, Monroeville, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 174,350, Aug. 24, 1971, Pat. No. 3,752,210. This application June 6, 1973, Ser. No. 367,666
Int. Cl. B22d *11/12*
U.S. Cl. 164—154 **6 Claims**



1. In a continuous-casting apparatus which includes a mold from the bottom of which a partially solidified strand of indefinite length may descend continuously, series of rolls below said mold for engaging opposite faces of the strand as it travels therebetween, at least some of said rolls defining a curved path in which the strand bends, whereby its direction of travel becomes substantially horizontal, and a starter bar to be connected to the leading end of said strand as it emerges from the mold and disconnected therefrom at a location spaced below the mold; the combination therewith of an improved mechanism for controlling forces on the strand, said mechanism comprising:

means operatively connected with selected rolls of said series for applying through said selected rolls first a force restraining descent of said starter bar and a strand connected thereto, and subsequently a speed-regulating tractive force as the leading end of the strand advances through said curved path, whereby a tractive force becomes needed to propel the strand, said selected rolls being at a location preceding the location at which said starter bar is disconnected;

a plurality of auxiliary drive means operatively connected with other selected rolls of said series at locations spaced apart from each other and from said first-named selected rolls, said other selected rolls being operable as idlers when said auxiliary drive means are deenergized;

control means operatively connected with the first auxiliary drive means nearest the mold for energizing this drive means when the speed-regulating tractive force reaches a predetermined maximum and thereby applying a first auxiliary tractive force to the strand; and

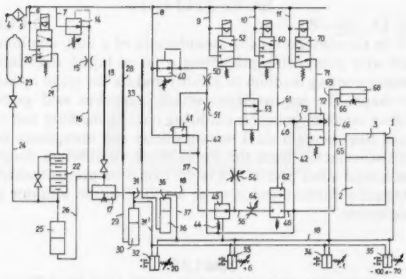
additional control means operatively connected with each other auxiliary drive means for energizing the other auxiliary drive means in sequence when the force on the preceding other auxiliary drive means reaches a predetermined maximum, and thereby applying additional auxiliary tractive force to the strand;

said speed-regulating tractive force and said auxiliary tractive forces minimizing lengthwise stresses in the strand throughout a casting operation.

3,861,457
REGULATING DEVICES FOR POURING MOLTEN METAL

Alphonse Bl Py, Billancourt, France, assignor to Kegie Nationale des Usines Renault, Billancourt (Hauts de Seine) and Automobiles Peugeot, Paris, both of, France

Filed July 5, 1972, Ser. No. 269,074
Claims priority, application France, July 21, 1971, 71.26657
Int. Cl. B22d *39/00*
U.S. Cl. 164—155 **6 Claims**



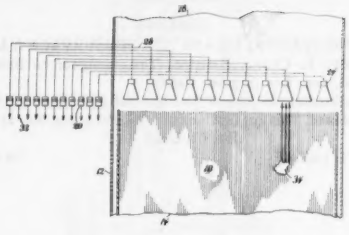
1. A regulator device for pouring foundry parts, especially parts poured in chill-moulds following the so-called low-pressure method, in which the metal is introduced into a mould by delivery from a melting furnace under the action of a gaseous pressure higher than atmospheric pressure, comprising: first means for controlling the application of pressure to the furnace including first means for comparing the pressure of the furnace with a pilot reference pressure in order to fill the mould, said first controlling means including first means for generating a pilot reference pressure and second means for generating a datum pressure, means for automatically adjusting said datum pressure, and second means for comparing and automatically identifying the pilot reference pressure with the adjustable datum pressure which is automatically adjusted after each injection of molten metal into the mould and unaffected by the conditions of operation of the device; second means, actuated by the comparison pressures, for controlling the supply of filling gas to the furnace with a large flow-rate and for the supply at a small flow-rate; means responsive to said second controlling means for opening and shutting-off the flow-rates as a function of differential pressures regulated by the furnace pressure and the pilot pressure, thereby permitting a pre-determined programming of the flow-rates and pressures for filling the mould.

3,861,458

MULTI-HEAD INFRA-RED RAY DETECTOR

George K. Ostrander, Angelica, and Donald F. Wixson, Wellsville, both of N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed June 4, 1973, Ser. No. 366,950
Int. Cl. F28d 19/00
U.S. Cl. 165—5 7 Claims



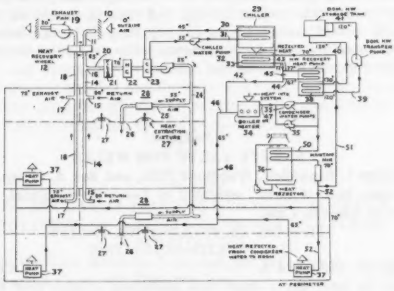
1. Apparatus having a housing provided with spaced inlet and outlet ports that direct the flow therethrough of a heating fluid, a mass of heat absorbent material in said housing intermediate the inlet and outlet ports adapted to be contacted by the heating fluid as it flows through the housing, a multiplicity of infra-red ray detectors viewing laterally adjacent sections of the material in said housing to each produce a base signal proportional to the infra-red rays received thereby, and a comparator for each detector adapted to simultaneously receive the base signal from each detector together with any variation thereof to note a change in the strength of the infra-red signal received by an individual detector from the base signal received thereby.

3,861,459

METHOD OF AND APPARATUS FOR HEATING, VENTILATING AND AIR-CONDITIONING UTILIZING HEAT RECOVERY

Frederick W. Koop, 5 Meadowbrook Dr., Lakewood, N.J. 08701

Filed Jan. 16, 1973, Ser. No. 324,097
Int. Cl. F25b 13/00
U.S. Cl. 165—62 10 Claims



1. A heating, ventilating and air-conditioning system comprising:

an air circulation system having a return air ductwork system defining a path for return air passage from a space to be conditioned, an exhaust air ductwork system defining a path for exhaust air passage from said return air system to the outside, an outside air ductwork system defining a path for passage of outside air from the outside to said return air ductwork system, a supply air ductwork system defining a path for supply air passage from a unit to a space to be conditioned, and a unit ductwork system for defining a passage for air through an air handling unit and extending between said return air ductwork system and said supply air ductwork system;

a cooling medium system including refrigeration means, a cooling coil disposed within said unit ductwork of said air circulation system so as to cool air circulating within said unit ductwork to be supplied to said supply air ductwork system, a cooling medium supply line for carrying a cooling medium from said refrigeration means to said cooling coil for circulation therethrough, and a cooling medium return line for carrying cooling medium from said cooling coil to said refrigeration means, said refrigeration means including a heat exchanger having a cooling medium path from inlet and outlet and a condenser water path from inlet to outlet;

a heat rejection system including a heat pump means disposed in said space to be conditioned, a condenser water circulation system, said condenser water circulation system for carrying condenser water from the condenser water outlet of said refrigeration means to the inlet side of said heat pump means and from the discharge side of said heat pump means to the condenser water inlet of said refrigeration means; and

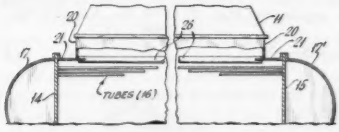
heat recovery means disposed to extend into said exhaust air passage and said outside air passage such as to recover heat from air passing in said exhaust air passage and to transfer said recovered heat to outside air passing within said outside air passage, said recovered heat being transferred by said outside air to said cooling coil for transfer to said cooling medium and thereafter by said cooling medium to said refrigeration means for transfer to said condenser water, said recovered heat in said condenser water for transfer to said space being conditioned through said heat pump.

3,861,460

CONDENSER CONSTRUCTION

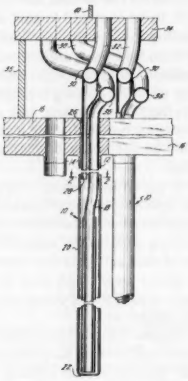
Michael J. Lenhardt, Trenton, N.J., assignor to De Laval Turbine Inc., Princeton, N.J.

Filed May 23, 1973, Ser. No. 362,948
Int. Cl. F28b 1/02; F28f 9/02
U.S. Cl. 165—111 20 Claims



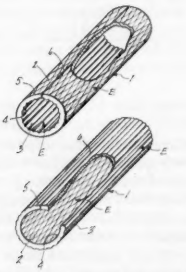
1. A steam-surface condenser, comprising an elongate shell, an assembly of two spaced tube sheets and associated tubes, longitudinally spaced means supporting spaced parts of said assembly within said shell, one of said supporting means being axially compliant, first and second water boxes defining chambers over the respective outer faces of said tube sheets and communicating with the respective outer ends of said tubes, said boxes being secured to said tube sheets over a peripherally continuous mounting region, and a plurality of spaced elongated strain-proportioning members securely interconnecting correspondingly spaced locations along said mounting regions.

3,861,461
BAYONET TUBE HEAT EXCHANGE
John A. Kissinger, Livingston, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Sept. 21, 1972, Ser. No. 291,099
Int. Cl. F28d 7/12
U.S. Cl. 165—142 4 Claims



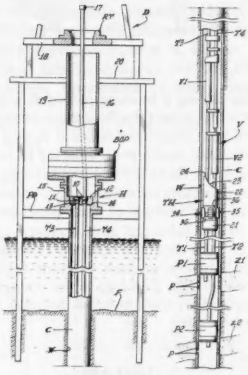
1. A bayonet tube assembly comprising:
an outer tube being a closed end and an open end adapted to be connected to a tube sheet;
an inner tube within said outer tube, having an open end adjacent to said closed end of said outer tube, and being longer than said outer tube so that when said outer tube is connected to said tube sheet, said inner tube will extend through said tube sheet;
an inner conduit within the space between said inner tube and said outer tube and located to extend from a location between said tube sheet and said open end of said inner tube through said tube sheet
whereby secondary fluid can be passed through said inner tube to reverse its direction and flow back between said inner tube and said outer tube until reaching said inner conduit and then flow through said conduit to pass through said tube sheet.

3,861,462
HEAT EXCHANGE TUBE
Charles D. McLain, Alton, Ill., assignor to Olin Corporation
Division of Ser. No. 214,034, Dec. 30, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 447,736
Int. Cl. F28f 1/42
U.S. Cl. 165—179 6 Claims



1. A welded hollow metal heat exchanger tube formed from metal strip material and having a longitudinally extending weld seam, said tube having a given wall thickness and an inside surface corresponding to one side of said strip material and an outside surface corresponding to the opposing side of said strip material, at least one heat exchange enhancement pattern formed on the outside surface by embossing the corresponding side of the strip and at least one heat exchange enhancement pattern formed on the inside surface by embossing the corresponding side of the strip, said enhancement pattern or patterns extending throughout only a portion of the tube wall thickness.

3,861,463
TUBING SPACING MEANS FOR SUBSURFACE VALVES
Talmadge L. Crowe, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 366,060, June 1, 1973, abandoned. This application Nov. 16, 1973, Ser. No. 416,433
Int. Cl. E21b 7/12
U.S. Cl. 166—.5 24 Claims

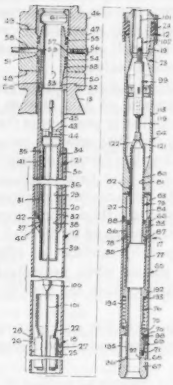


1. In well production apparatus: subsurface tubing hanger means anchorable in engagement within a well casing and having a seat for a subsurface shutoff valve, shutoff valve means seated in said seat, said valve means having a passage for communicating with subsurface tubing extending downwardly in the well from said tubing hanger means, tubing head means spaced above said valve means, surface tubing extending between said valve means and said tubing head, said surface tubing and said tubing head having landing means for supporting said surface tubing, and spacing means incorporated in said surface tubing for adjusting the space between said valve and said landing means while said valve means is seated in said tubing hanger means.

3,861,464
SAFETY VALVE FOR WELLS
George I. Boyadjieff, Woodland Hills, and Ben A. Otsap, Encino, both of Calif., assignors to Varco International, Inc., Los Angeles, Calif.
Filed Oct. 29, 1973, Ser. No. 410,418
Int. Cl. E21b 43/12, 33/03
U.S. Cl. 166—224 A 18 Claims

1. In well safety apparatus, including a valve unit to be lowered into a well and located therein, and a member extending upwardly toward the surface of the earth for actuating said valve unit; the improvement comprising formation of said valve unit to include means containing and enclosing a confined body of fluid, said means including a first element connectible to said member for actuation upwardly thereby and exposed to and acting against said confined body of fluid in a manner displacing a portion of said fluid in response to said upward movement of said element, and a second element exposed to said confined body of fluid and actuable down-

wardly by the pressure of the fluid upon said upward movement of said first element, said valve unit including also valve



means operable by said downward movement of said second element.

3,861,465

METHOD OF SELECTIVE FORMATION TREATMENT

Henry X. Mignotte, Gretna, La., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Division of Ser. No. 284,340, Aug. 28, 1972, Pat. No. 3,797,572. This application Jan. 4, 1974, Ser. No. 430,720

Int. Cl. E21b *37/00, 43/25, 43/27*

U.S. Cl. 166—255 **10 Claims**

10. The method of selectively treating subsurface earth formations traversed by a well bore in which casing has been set and perforated at vertically spaced sections of the casing, comprising running into the well casing on a pipe string a treating tool having vertically spaced packing means sealingly engageable with the casing and a by-pass passage through the tool, progressively moving said treating tool to successive locations at which said packing means straddle one of the perforated sections, closing the by-pass passage through the tool, and displacing a treating fluid through said pipe string and into said treating tool for discharge from said treating tool between said vertically spaced packing means and through the perforations straddled by said packing means.

3,861,466

OIL RECOVERY PROCESS UTILIZING AQUEOUS SOLUTION OF A MIXTURE OF ALKYL XYLENE SULFONATES

Walter W. Gale, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Jan. 2, 1974, Ser. No. 430,349

Int. Cl. E21b *43/22*

U.S. Cl. 166—273 **19 Claims**

1. In a method of recovering crude oil from a subterranean formation wherein an aqueous surfactant solution is injected into the formation through at least one injection means to displace crude oil toward at least one production means, the improvement wherein said aqueous surfactant solution includes as the surfactant a mixture of at least one C_{8-12} o-xylene sulfonate and at least one C_{16-20} o-xylene sulfonate.

3,861,467

PERMEABLE CEMENTING METHOD

Bobby G. Harnsberger, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,426

Int. Cl. E21b *33/13, 43/02;* **C04b** *7/02*

U.S. Cl. 166—276 **6 Claims**

1. A method of treating an incompetent formation penetrated by a wellbore to prevent the movement of unconsolidated sand particles from said incompetent formation to the wellbore as formation fluids are recovered from said formation which comprises forming a treating composition consisting essentially of 1 part of cement, from 3 to 12 parts by weight of sand having a particle size between 10 and 80 mesh, from about 0.7 to about 0.95 part by weight of salt water to wet the sand and cement particles each per part of cement, and from about 0.1 to about 1 percent by weight of xanthan gum, based on the amount of water, suspending the resultant treating composition in a carrier oil fraction consisting of a refined diesel oil containing from 100 to about 800 ppm of naphthenic acids therein, placing said suspension against the unconsolidated formation, permitting the cement to set to form a permeable cement barrier between the formation and the wellbore whereby formation fluids can be recovered by passage through the formed permeable cement barrier.

3,861,468

METHOD FOR STABILIZING INCOMPETENT SAND CONTAINING FORMATIONS

Beverly A. Curtice, Portsmouth, Va., and James W. Hughes, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,427

Int. Cl. E21b *33/13, 43/02;* **C04b** *7/02*

U.S. Cl. 166—276 **10 Claims**

1. In a method of treating an oil-containing incompetent formation penetrated by a wellbore to prevent the movement of unconsolidated sand particles from said formation to the wellbore as the oil is recovered from said formation, wherein a treating composition is formed consisting essentially of sand, cement and a sufficient amount of a petroleum oil containing an oil wetting agent therein to oil wet the sand and cement particles, said treating composition is suspended in an aqueous carrier medium, the resulting aqueous suspension is injected at a pressure sufficient to force the treating composition into said unconsolidated formation, and wherein the placed treating composition is contacted with an aqueous surface active agent solution to water-wet the cement particles thereof and to effect setting of the cement to form a permeable cement barrier through which oil is recovered, the improvement which comprises conditioning a field water containing a cement dispersing agent therein prior to use of the conditioned field water as the aqueous carrier medium for said treating composition, said conditioning comprising contacting the field water with a calcium compound selected from the group consisting of calcium oxide, calcium hydroxide and mixtures thereof in an amount sufficient to raise the pH of the field water to a pH value between about 8.5 and 10, with stirring, and thereafter filtering said alkaline treated field water to remove the precipitated cement dispersing agent therefrom.

3,861,469

TECHNIQUE FOR INSULATING A WELLBORE WITH SILICATE FOAM

Jack H. Bayless, and Alton R. Hagedorn, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

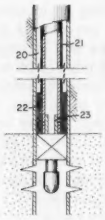
Filed Oct. 24, 1973, Ser. No. 409,344

Int. Cl. E21b *43/24*

U.S. Cl. 166—303 **10 Claims**

1. A process for thermally insulating a tubing string suspended within a wellbore which comprises injecting into the wellbore-tubing string annular space a solution consisting essentially of water and a water-soluble silicate, introducing

thermal energy into the tubing string to remove water from the solution and to deposit a coating of silicate on the tubing string, venting the annular space between the tubing string and the wellbore to discharge water vapor removed from the solution and to discharge excess silicate solution from the



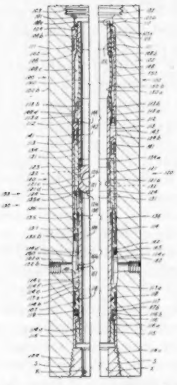
annulus, continuing the introduction of thermal energy into the tubing string until excess silicate solution remaining in the annulus forms a porous, permeable, and water-soluble mass which occupies the space between the wellbore and the tubing for at least a portion of the vertical extent of the space.

3,861,470

METHOD AND APPARATUS FOR INSIDE BLOWOUT PREVENTER DRILLING TOOL

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Filed Sept. 21, 1973, Ser. No. 399,534
Int. Cl. E21b *43/01, 43/12*
U.S. Cl. 166—315 **45 Claims**



1. A method of operating a well tool for controlling undesired flow in a well conduit, including the steps of:
mounting the well tool with the well conduit to control flow through the well conduit;
sensing the fluid pressure exteriorly of the well conduit adjacent the well tool;
comparing the sensed pressure exteriorly of the well conduit with the fluid pressure in the well conduit; and
opening the well tool to enable flow in either direction through the well conduit when the pressure in the well conduit approaches within a predetermined amount of the sensed pressure exteriorly of the well conduit wherein the well tool is opened to enable the flow when the pressure in the well conduit is less than the pressure exteriorly of the well tool by the predetermined amount.

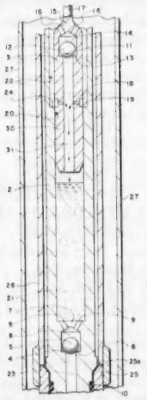
18. An inside blowout preventer well tool, including:
a frame adapted for mounting with a well conduit at a desired location;
closure means mounted with said frame for movement to and from an open position enabling flow through the well conduit and a closed position blocking flow through the well conduit; and
operator means operably connected with said closure means for moving said closure means to and from the open and closed positions, said operator means moving said closure means to the open position when the pressure in the well conduit is substantially equal to the pressure externally of the well conduit and adjacent said frame;
said operator means including:
piston means having a first pressure responsive surface for effecting movement of said closure means to the open position in response to pressure in the well conduit effecting urging on said first pressure responsive surface;
an expansible chamber formed by said frame and said operator means with said first pressure responsive surface exposed to the pressure in said expansible chamber;
a pressure transmitting fluid in said expansible chamber for transmitting the pressure in the well conduit to said first pressure responsive surface for effecting movement of said closure means while protecting said first pressure responsive surface from the well fluids in the well conduit;
a movable sealing member enclosing said expansible chamber and having first and second pressure responsive surfaces;
said first pressure responsive surface of said sealing member exposed to pressure in the well conduit;
said second pressure responsive surface of said sealing member exposed to the pressure transmitting fluid in said expansible chamber, said sealing member moving to transmit the pressure in the well conduit urging on said first surface to the pressure transmitting fluid in said expansible chamber by the urging of said second surface on said fluid pressure transmitting fluid wherein fluid pressure in the well conduit is transmitted into said expansible chamber.

3,861,471

OIL WELL PUMP HAVING GAS LOCK PREVENTION MEANS AND METHOD OF USE THEREOF

Bobby Lynn Douglas, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 17, 1973, Ser. No. 397,571
Int. Cl. E21b *43/00;* **F04b** *21/04*
U.S. Cl. 166—314 **8 Claims**



6. An oil well pump having relief means for preventing gas lock and reducing fluid hammer, said pump comprising:
an elongated tubular pump barrel adapted to be inserted

into a production tubing string, said barrel having an axial, longitudinal bore passage therethrough and an enlarged relief passage therein;

an elongated pump plunger telescopically and sealingly engaged in said barrel bore passage, said plunger adapted to be telescoped from a first uppermost position in said barrel to a second lowermost position in said barrel, said plunger having a longitudinal bore passage therethrough; valve means in said barrel arranged to allow fluid flow only in an upward direction through said barrel bore passage;

valve means in said plunger arranged to allow fluid flow only in an upward direction through said plunger bore passage;

relief bypass means passing through the wall of said plunger between said plunger valve means and said barrel valve means and arranged to communicate between said plunger bore passage and said barrel bore passage when said plunger is in said first position and further arranged to prevent such communication when said plunger is in said second position.

7. A method of pumping from an oil well, fluids containing large amounts of dissolved or entrained gases therein, said method comprising the steps of:

placing in the well a production tubing string communicating with the formation to be produced;

locating a reciprocating pump sealingly within said tubing string, said pump having a plunger traveling telescopically within a barrel, traveling check valve means, and standing check valve means;

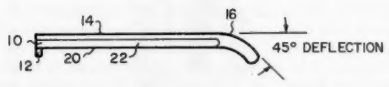
reciprocating said pump plunger between upper and lower positions into said barrel to provide lifting force to the fluids in said oil wells; and

communicating the area between said standing valve means and said traveling valve means to the area above said pump in said tubing string in the uppermost position of said plunger in said barrel while maintaining the bottom end of said plunger continuously telescoped in said barrel, thereby displacing gas between said two check valve means with pumped well fluid from above said two check valve means.

3,861,472
HORSESHOE WITH FLEXIBLE SECTIONS

Edward McConnon, 51 Shumpike Rd., Springfield, N.J. 07081

Filed Apr. 11, 1973, Ser. No. 350,042
Int. Cl. A01l *7/02*
U.S. Cl. 168—15 **3 Claims**



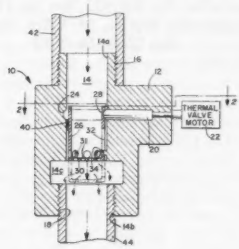
1. A shoe for horses and similar hooved animals comprising a rigid generally U-shaped member having attached to both ends flexible members having about the same thickness as the rigid member and constructed of material sufficiently flexible to bend at least twenty degrees when subjected to a force acting generally downwardly on the rear edge of the flexible member and having a magnitude insufficient to knock off said shoe from the hoof, said flexible member extending rearwardly from the rigid member between one eighth inch and one inch to continue the general U-shape and forming flexible heel sections of the shoe whereby a shoe is obtained that will not be knocked off when struck by an overreaching hoof because the flexible heel section flexes down out of the way of the overreaching hoof.

3,861,473
TEMPERATURE RESPONSIVE ON-OFF FLUID CONTROL DEVICE AND A CONTROL ASSEMBLY AND FIRE PROTECTION SYSTEM INCORPORATING SAID DEVICE

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed June 7, 1974, Ser. No. 477,415
Int. Cl. A62c *37/06*
U.S. Cl. 169—19 **15 Claims**

1. A fluid control device comprising a body member having a passage therethrough and extending between an inlet adapted to be connected to a source of fluid under pressure and an outlet adapted to be connected to a head for discharging said fluid, valve means supported by said body member and movable between a first position in which it blocks the flow of fluid through said passage and a second position in wich it permits the flow of fluid through said passage and to said head, and control means normally maintaining said valve

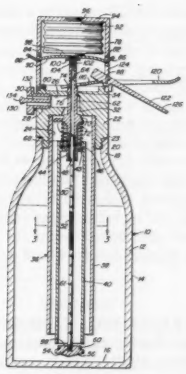


means in said second position, said control means moving said valve means to said first position in response to the temperature in the vicinity of said body member attaining a predetermined, relatively high, value and then falling to a predetermined, relatively low, value.

3,861,474
COMBINATION DUAL TUBULAR PRESSURE STORAGE MEANS AND DISCHARGE FOR FIRE EXTINGUISHERS AND LIKE APPARATUS

Joseph S. De Palma, 109 Carlson Ct., Closter, N.J. 07624

Filed Mar. 14, 1974, Ser. No. 451,278
Int. Cl. A62c *13/00*
U.S. Cl. 169—75 **11 Claims**



1. In combination, a pressure container having an upper outlet opening, an upstanding double tube assembly disposed within said container including inner and outer tube members,

said outer tube member having its upper end supported in sealed relation to said outlet, valve means operable to selectively open and close said outlet and including means for selectively opening and closing the lower end of said inner tube, the lower ends of said tubes being spaced above the bottom of said container, the space between the outer tube and the inner surfaces of said container including a lower portion for receiving dry chemicals and an upper portion for containing propellant gases under pressure, the space between the inner and outer tubes defining an outlet passageway for said dry chemicals and extending upwardly toward and communicated with said outlet, and the interior of said inner tube defining a pressure chamber for containing a supplemental propellant gas charge.

3,861,475

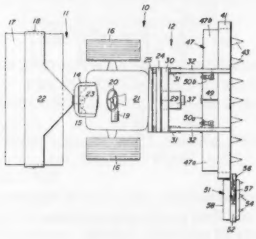
COMBINED LEVELING AND COMPACTING EARTH WORKING MACHINE

Witold Kuncewicz, Old Kennel, Flint Hill, Va. 22627

Continuation of Ser. No. 201,922, Nov. 24, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 393,917

Int. Cl. A01b *49/02*

U.S. Cl. 172—71 **9 Claims**



1. In an earth working implement, the combination including chassis means having transversely disposed helically surfaced auger means mounted at the forward end thereof for initially excavating and transversely distributing surface material, transversely disposed mold board means mounted on the chassis means behind said auger means for controlling the depth and distribution of material excavated by said auger means, a pair of ground engaging traction wheels mounted on said chassis means rearwardly of said auger means, transversely disposed ground engaging roller means mounted at rearward portion of said chassis means substantially in alignment with and substantially equal in width as said mold board means for compacting material distributed by said mold board means, prime mover means mounted on said chassis means and means connecting the prime mover means with said traction wheels and said auger means for driving said traction wheels for movement in forward and reverse directions and for rotating said auger means and means on said chassis means for steering said implement, said chassis means also including means connected with the auger means for raising and lowering and tilting said auger means and mold board means with respect to the ground, said mold board means having a transverse lower edge and including means connected between the auger means and mold board means for raising and lowering said lower edge independently of said auger means.

3,861,476

CONTROL VALVE FOR FLUID OPERATED TOOL

Alvin H. Borsum, Spring Lake, Mich., assignor to Gardner - Denver Company, Dallas, Tex.

Filed Aug. 6, 1973, Ser. No. 386,256

Int. Cl. B23b *45/04*; F16k *35/02*

U.S. Cl. 173—169 **6 Claims**

1. In a fluid operated tool:

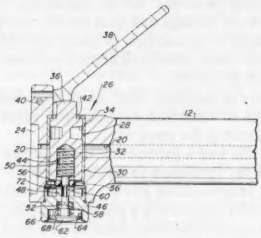
a housing;

a fluid operated motor disposed in said housing;

a passage in said housing for conducting pressure fluid to said motor;

a fluid flow control valve interposed in said passage including a closure member movable between open and closed positions, a valve operating member for manually actuating said closure member to the open position and biasing means for urging said closure member to the closed position; and,

locking means cooperable with said closure member for preventing the movement of said closure member to said open position, said locking means including a movable rod actuatable at will for unlocking said closure member for movement to the open position in response to the actuation of said operating member, and means engage-



able with said rod and releasably engageable with said closure member for locking said closure member in a closed position when said rod is in a first position, said means being operable in response to the movement of said rod to a second position to unlock said closure member.

3,861,477

DRILLING BITS FOR BORING HOLES AND WELLS

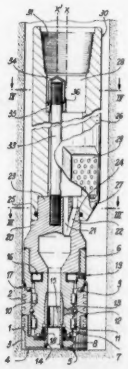
Robert Lazayres, Saint-Germain-En-Laye, France, assignor to Entreprise de Recherches et d' Activities Petrolieres (ELF), Paris, France

Filed July 27, 1973, Ser. No. 383,316

Claims priority, application France, Aug. 18, 1972, 72.29537

Int. Cl. E21b *9/36*

U.S. Cl. 175—227 **17 Claims**



1. A bit for drilling wells in the earth, of the type comprising a cylindrical roller having a diameter smaller than the diameter of the drilled hole and larger than the radius of said hole, a flat cutting face on said roller said roller perpendicular to the

axis of said roller, irrigated destruction means on said face, armed teeth for said roller around its perimeter said roller being surmounted on the external cylindrical surface by segments which are protected against wear by anti-abrasive elements, said roller being mounted to rotate freely on a tubular shaft having a geometrical axis which is parallel to that of the drilled hole and displaced off-centre with respect to said hole, a connector, a tensioning member maintaining said connector in said geometrical axis, said shaft being connected parallel to the axis of; and in angularly positioned relation with said connector, said connector having a geometrical axis which coincides with the axis of the drilled hole, a duct in said connector for the irrigation of the bit, means at the end of said connector remote from the tool for coupling with the drill stem, external eccentric masses on said connector protected against wear on the peripheral face thereof by anti-abrasive elements, said masses centering said connector within the drilled hole, compensating for the reversing couple exerted by the bit on said connector shaft during drilling and providing static and dynamic balancing of the tool-connector assembly during the drilling operation.

3,861,478

HYDRAULIC CRUSHING DEVICE FOR USE WITH A BORING TOOL

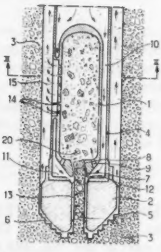
Elie Condolios, Grenoble, and Abel Cortes, Le Pecq, both of France, assignors to Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM) and Compagnie Francaise des Petroles, both of Paris, France

Filed Aug. 23, 1973, Ser. No. 390,713

Claims priority, application France, Aug. 23, 1972, 72.30063

Int. Cl. E21b *9/16*

U.S. Cl. 175—404 **6 Claims**



1. In combination with a hollow boring device including a boring tool at one end thereof having a central duct, a crushing device comprising means forming a crushing chamber having an elongated shape in the direction of the axis of the boring device and being secured to the wall of said boring device in the portion of the hollow of said boring device adjacent the boring tool, said boring device having an outside wall spaced from said chamber to form therebetween at least one passage for conveying boring fluid to said boring tool, the end of said crushing chamber facing said boring tool having a central input orifice communicating directly with said central duct in said tool, said crushing chamber additionally having at least one opening of small cross section arranged adjacent said central input orifice and communicating with said passage conveying boring fluid, so that at least one fluid jet will enter said chamber through said opening at high speed and high pressure in the direction of the axis of the chamber from the bottom towards the top thereof, a plurality of removal orifices in said chamber and passing through the wall of said boring device for removal of fluid and crushed waste material, the total cross section of said orifices being sufficient to cause only a small loss of head in consideration of the output of said fluid jet.

3,861,479

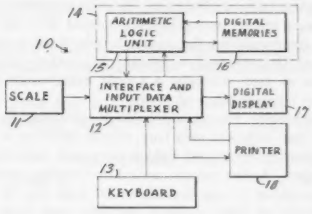
TARE ENTRY CIRCUITRY FOR A COMPUTING SCALE

Edward G. Pryor, Toledo, Ohio, assignor to Reliance Electric Company, Toledo, Ohio

Filed Apr. 17, 1974, Ser. No. 461,516

Int. Cl. G01g *19/04*

U.S. Cl. 177—25 **6 Claims**



1. A computing scale comprising, in combination, weighing scale means for generating a digital weight signal, a first digital memory, data input means having a plurality of digit keys for supplying data to said first memory and having a tare entry key, timing means for measuring a predetermined time interval, means responsive to the closure of any of said digit keys for starting said timing means, a second digital memory for storing a tare weight, means responsive to the closure of said tare entry key while said timer is on for shifting at least one digit from said first memory into said second memory, means responsive to the closure of said tare entry key while said timer is off for storing the digital weight signal from said scale means in said second memory, and means responsive to said digital weight signal and to the contents of said second memory for computing a net weight of an article weighed on said scale means.

3,861,480

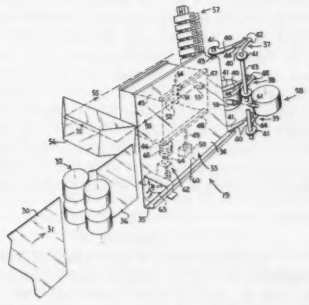
HIGH SPEED WEIGHING SCALE

Fredric E. Zucker, Stamford, Conn.; Anthony Storace, Tarrytown, N.Y., and Paul R. Sette, Hamden, Conn., assignors to Pitney - Bowes, Inc., Stamford, Conn.

Filed June 5, 1974, Ser. No. 476,655

Int. Cl. G01g *3/14, 3/08*

U.S. Cl. 177—210 **8 Claims**



1. A high speed weighing scale for weighing pieces of mail being fed edgewise along a mail handling path running through a mail handling system, said high speed weighing scale comprising:

a weighing tray physically constructed to receive and support a piece of mail upon an edge thereof, said tray being movably supportable for movement through a weighing range, said tray comprising a horizontally disposed base

section and at least one wall member extending from said base section, an edge of a piece of mail to be weighed being received and supported upon said base section, and said wall member lending additional support to the piece of mail for maintaining said piece of mail upon said edge; supporting means supporting said weighing tray for movement through a weighing range, said supporting means comprises a pair of leaf-spring members interconnected between said weighing tray and a base support; and

measuring means operatively associated with the weighing tray for measuring the degree to which the weighing tray moves through said weighing range when supporting a piece of mail, whereby a weight determination may be made for said piece of mail,

said measuring means comprises a stationary light source disposed adjacent said tray, means defining a light path originating from said light source and including a light window, shutter means carried by said tray and operable in response to the movement of said tray to limit the amount of light passing through said light window, whereby the amount of light passing through said window is a measure of the weight of a piece of mail which has caused the tray to move.

3,861,481

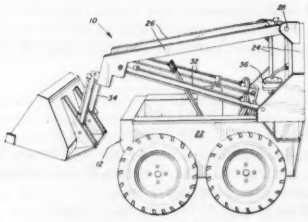
HYDROSTATIC DRIVE ARRANGEMENT FOR VEHICLES

Roy A. Gillette, and Maurice Klee, both of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Aug. 10, 1973, Ser. No. 387,292

Int. Cl. B62d *11/02*

U.S. Cl. 180—6.48 **4 Claims**



1. Drive means for a vehicle having a body and two pairs of wheels respectively on opposite sides of said body, comprising: a fluid motor for each pair of wheels, each fluid motor having an output shaft; planetary gear means between each shaft and one wheel of each pair, said planetary gear means each including a sun gear fixed to the output shaft, planet gears in mesh with said sun gear and a ring gear in mesh with said planet gears; a hub secured to each ring gear, said one wheel of each pair being respectively secured to said hubs; and means respectively between the hubs and the other wheels of each pair for driving the other wheels of each pair of wheels.

3,861,482

TRAILER DRIVE ARRANGEMENT

W. J. Stephens, 3125 S. W. 15th St., and Frank J. Oleski, 3451 S. W. 17th St., both of Fort Lauderdale, Fla.

Filed June 7, 1973, Ser. No. 367,838

Int. Cl. B60s *9/16*

U.S. Cl. 180—13 **5 Claims**

1. In a drive arrangement for a trailer that is releasably attachable to a towing vehicle, said drive arrangement having: a ground wheel;

a motor for driving said ground wheel;

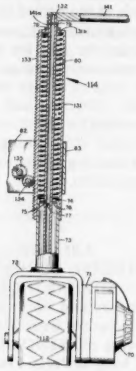
rigid support means for the ground wheel having provision for rigid attachment to the trailer;

a manually operable crank and gear means driven by said crank, said crank and gear means being rotatably carried by said support means;

and an upwardly extending rack meshing with said gear means to be displaced thereby upward or downward with respect to said support means;

the improvement which comprises:

an upwardly extending hollow sleeve having said rack attached thereto;



a coupling member slidably received in the lower end of said sleeve and extending downward from the latter, a wheel support extending down from the lower end of said coupling member and rotatably supporting the ground wheel;

means coupling said sleeve to said coupling member and to said wheel support to impart the upward movement of the sleeve to the coupling member and to the wheel support; and a coil spring received inside said sleeve above said coupling member and compressed axially between them to yieldingly oppose relative vertical movement between said rack and said ground wheel.

3,861,483

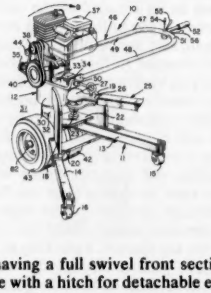
TRACTOR HAVING A FULL SWIVEL FRONT SECTION

Clement C. Pavelka, 376 Orange Dr., Oxnard, Calif. 93030

Continuation-in-part of Ser. No. 385,066, Aug. 2, 1972, Pat. No. 3,819,001. This application Apr. 26, 1974, Ser. No. 464,519

Int. Cl. B62d *51/04*

U.S. Cl. 180—19 S **10 Claims**



1. A tractor having a full swivel front section, comprising:

a. a mobile frame with a hitch for detachable engagement with a vehicle to be towed;

b. an upright barrel fixed to a front portion of the mobile frame, the mobile frame and barrel defining a wheel

maneuvering space beneath the barrel and ahead of the mobile frame;

c. a drum swivelly coupled to and disposed within the barrel for full 360° clockwise and counter-clockwise rotation;

d. a chassis extending through and coupled to the drum, the chassis having a top section extending above the barrel and a bottom section forming a pair of depending forks that extend beneath the barrel;

e. a motor coupled to the chassis top section;

f. a steering mechanism connected to the motor or chassis top section for maneuvering the tractor;

g. a pair of drive wheels coupled to the chassis bottom section fully beneath the barrel and drum and sufficiently spaced from the mobile frame so that the drive wheels may be fully turned through 360° within the wheel maneuvering space without contacting the mobile frame;

h. a pair of axles secured to the wheels;

i. a differential gear assembly between the chassis bottom section forks and arranged to interconnect the pair of axles for minimizing skidding and jerkiness tendencies of the wheels during turning movements of the tractor;

j. drive means operatively interconnecting the motor and drive wheels and,

k. actuating means operatively coupled to the drive means for selectively activating the drive means when the motor is in operation.

3,861,484

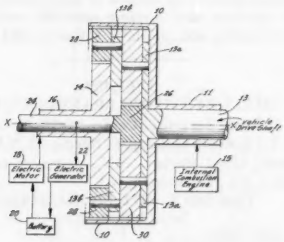
HYBRID VEHICULAR POWER SYSTEM

Kenneth E. Joslin, 28811 Cove Crest Dr., Palos Verdes Peninsula, Calif. 90274

Continuation of Ser. No. 111,196, Feb. 1, 1971, abandoned. This application Sept. 11, 1972, Ser. No. 288,069

Int. Cl. B60k *9/00*

U.S. Cl. 180—65 A **3 Claims**



1. A drive system for a vehicle, or the like, comprising: an electric motor; an internal combustion engine; a drive shaft for the vehicle; an electric generator; and gear means including a first section coupling said electric motor and said internal combustion engine to said drive shaft, and including a second section coupling said internal combustion engine to said electric generator to enable said internal combustion engine to drive said generator, in which said first section of said gear means includes planetary gear carrier means coupled to said drive shaft and rotatable therewith about the longitudinal axis of said drive shaft; a first plurality of planetary gears carried by said carrier means; an input shaft coaxial with said drive shaft and coupled to said electric motor; a first sun gear coupled to said input shaft and rotatable therewith about the longitudinal axis thereof and engaging said first plurality of planetary gears; and an internal toothed gear coupled to said internal combustion engine to be driven thereby and surrounding and engaging said planetary gears of said first plurality, in which said second section of said gear means includes a second plurality of planetary gears carried by said carrier means, said second plurality of planetary gears being spaced axially from said first plurality of planetary gears and engaging said internally toothed gear; a further input shaft coaxial with said first-named input shaft and coupled to said electric generator to drive said generator; and a second sun gear coupled to said further input shaft and rotatable therewith about the longitudinal axis thereof and engaging said second plurality of planetary gears.

3,861,485

ELECTRIC MOTOR VEHICLE AND DRIVE SYSTEM THEREFOR

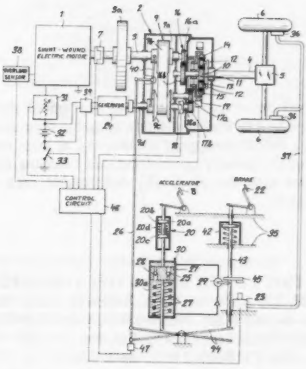
Heinrich Busch, Wesel, Germany, assignor to GES Gesellschaft fur elektrischen Strassenverkehr GmbH, Dusseldorf, Germany

Filed Aug. 22, 1973, Ser. No. 390,565

Claims priority, application Germany, Aug. 23, 1972, 2241496

Int. Cl. B60k *17/08*

U.S. Cl. 180—65 R **10 Claims**



1. An electric drive for a motor vehicle having an accelerator and at least one drive wheel, said drive comprising:

an electric motor of the shunt-wound type operable at a generally uniform speed;

a transmission having an input shaft operatively connected to said motor and a pair of output shafts and including

mechanism connected between said input shaft and one of said output shafts for transmitting force therebetween at a fixed speed ratio, and

mechanism connected between said input shaft and the other output shaft for transmitting force therebetween at a variable speed ratio and having a control element displaceable for changing said variable ratio;

means connected between said output shafts and said drive wheel for rotating the latter at a speed depending on the rotation speeds of said output shafts;

means between said accelerator and said control element for varying said ratio and thereby the rotation speed of said drive wheel; and

damper means between said accelerator and said control element for preventing displacement of said control element faster than a predetermined speed regardless of displacement speed of said accelerator, said predetermined speed being such as to prevent overload of said motor.

3,861,486

ENERGY-ABSORBING INSTRUMENT PANEL FOR MOTOR VEHICLES

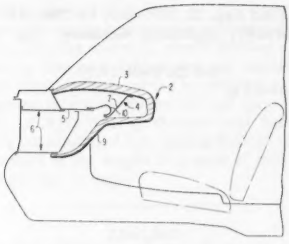
Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Mar. 19, 1973, Ser. No. 342,414

Claims priority, application Germany, Mar. 20, 1972, 2213445

Int. Cl. B60k *35/00*; B60r *21/02*

U.S. Cl. 180—90 **21 Claims**



1. An energy-absorbing, deformable instrument panel for motor vehicles having a plastically deformable area, comprising a buckling resistant support means, and at least one tension means for operatively connecting said buckling resistant support means with the plastically deformable area of the instrument panel.

3,861,487

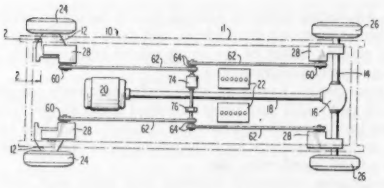
ELECTRIC POWER MEANS FOR VEHICLES

Walter L. Gill, 225 S. Buena Vista, Redlands, Calif. 92373

Continuation-in-part of Ser. No. 360,959, May 16, 1973. This application June 27, 1973, Ser. No. 374,127

Int. Cl. B60k *25/10*; B60l *11/00*

U.S. Cl. 180—65 R **10 Claims**



1. A vehicle provided with means for supporting said vehicle for movement over a supporting medium and adapted to carry an electric system and a battery for powering such system, said vehicle comprising two relatively reciprocatory parts, means supporting one said part from the other said part for enabling relative movement therebetween along at least two different non-colinear paths, means connected between such parts for converting such relative movement into rotary mechanical power, power reserve means receiving and storing said rotary mechanical power, and current generating means for recharging said battery and driven by said power reserve means.

3,861,488

COLLISION SPEED SENSOR

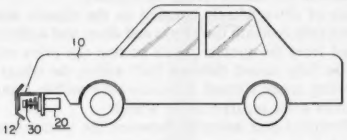
Tomohiro Hamada; Atsushi Ueda, and Takumi Tatsumi, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1972, Ser. No. 231,485

Claims priority, application Japan, Mar. 8, 1971, 46-14977; Mar. 27, 1971, 46-21696

Int. Cl. B60r *21/02*; B60q *1/52*

U.S. Cl. 180—91 **7 Claims**



1. A collision speed sensor device for use with a motor vehicle comprising a housing, an electromagnetic coil fixedly disposed within only a part of said housing, a rod extending through said housing, a magnet member movably disposed within said housing on a first end of said rod, said magnet member being movable between a first position where the magnetic path of said magnet member is spaced from and substantially not interlinked with said electromagnetic coil and a second position where said electromagnetic coil is substantially interlinked with the magnetic path of said magnet member, collision bearing means connected to a second end of said rod at a position outside of said housing and responsive to the collision of the associated motor vehicle with an obstacle for causing said magnet member to move to said second position and for inducing a voltage across said coil which is proportional to the collision speed of the motor vehicle, and spring means positioned outside of said housing surrounding said rod between said housing and said collision bearing means for biasing said magnet member to said first position.

3,861,489

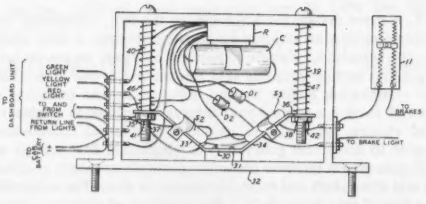
MERCURY SWITCH BRAKING SYSTEM

Thomas J. Lang, Torrance, Calif.; Joseph A. Lang, Huntington, N.Y.; Kenneth G. Lang, E. Northport, N.Y., and Robert L. Davis, Lloyd Harbor, N.Y., assignors to Lang Davis Indistries, Inc., Huntington, N.Y.

Filed July 5, 1972, Ser. No. 269,034

Int. Cl. B60t *7/20*

U.S. Cl. 180—103 **6 Claims**



1. An automatic stability control system for a vehicle to prevent swerving and swaying of said vehicle, said system comprising means for sensing lateral acceleration forces acting upon said vehicle to provide electrical acceleration signals representative of said forces, and brake means associated with said vehicle and responsive to said acceleration signals to actuate said brake means to prevent swaying and swerving of said vehicle, said sensing means including sensitivity adjustment means for setting the minimum magnitude of lateral acceleration force to which said sensing means responds to provide said acceleration signals, said sensing means including

a pair of inclined mercury switch assemblies oriented to sense left and right lateral acceleration, said adjustment means including manually actuated means to vary the angle of inclination of the mercury switch assemblies, said switch assemblies including means indicating lateral acceleration approaching an unstable condition prior to the actuation of the brake means, each of said mercury switch assemblies including a pair of longitudinally spaced contacts in a container oriented in inclined position, a third contact extending longitudinally in the container in spaced relation to the pair of contacts, a quantity of conductive mercury in the container normally closing a circuit between the third contact and the lowest of the pair of contacts, said quantity of mercury being movable by lateral acceleration initially into a position for closing a circuit between the third contact and both of the pair of contacts to provide means for indicating lateral acceleration approaching an unstable condition and subsequently to a position closing a circuit between the third contact and the second contact of the pair of contacts located at the upper end of the container for applying the brake means when the lateral acceleration reaches an unstable condition thereby providing a precautionary warning of an approach to an unstable condition.

3,861,490

CONSTANT SPEED CONTROL SYSTEM OF VEHICLE TRAVEL

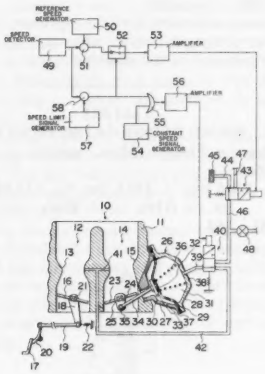
Naoji Sakakibara, Chiryu, Japan, assignor to Aisin Seiki Kabushiki kaisha, Aichi, Japan

Filed Mar. 30, 1973, Ser. No. 346,431

Claims priority, application Japan, Mar. 30, 1972, 47-032376

Int. Cl. B60k *31/00*

U.S. Cl. 180—108 **9 Claims**



1. A system for constant speed control of a vehicle comprising:

an accelerator;

a carburetor including primary and secondary barrels, each having a venturi;

a primary throttle valve for said primary barrel, said primary throttle valve being mechanically connected to said accelerator;

a secondary throttle valve for said secondary barrel;

a vacuum servo means operatively connected to said secondary throttle valve and movable to effect movement of said secondary throttle valve;

first conduit means for transmitting the venturi vacuum to said servo means;

second conduit means for connecting said servo means to the atmosphere and to a vacuum source;

means for establishing the desired vehicle speed;

means for comparing the actual vehicle speed and the desired vehicle speed and for delivering an output signal corresponding thereto;

first valve means disposed in said first and second conduit means for selectively opening and closing said first and second conduit means according to said establishing means; and

second valve means disposed in said second conduit means for selectively connecting said servo means to the atmosphere and the vacuum source in response to said output signal.

3,861,491

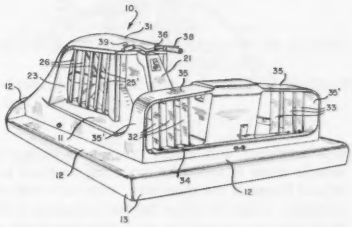
AIR CUSHION VEHICLE

Hugo S. Ferguson, c/o Air Cushion Vehicles, Inc., R.D. No. 5, Box 85, Troy, N.Y. 12180

Continuation-in-part of Ser. No. 314,995, Dec. 14, 1972, abandoned. This application Nov. 27, 1973, Ser. No. 419,244

Int. Cl. B60v *1/16*

U.S. Cl. 180—120 **27 Claims**



1. An air cushion vehicle which comprises

a. a body,

b. means for propelling and supporting said body on an air cushion including air propelling means mounted toward the forward end of the body and adapted to produce a flow of air in the rearward direction of the vehicle,

c. front steering means comprising respective upwardly-extending forward sets of vanes rotatably mounted on opposite sides of the vehicle and spaced progressively rearwardly and inwardly in the air flow from said propelling means,

d. rear steering means mounted toward the rear of the vehicle on each side thereof,

e. means for orienting said forward sets of vanes approximately fore and aft for forward propulsion with at least a portion of the air from said propelling means directed to said rear steering means on each side of the vehicle,

f. and steering control means for turning predetermined vanes of either of said forward sets of vanes outward to direct a portion of the air from said propelling means to the ambient air at lateral angles on either side of the vehicle.

3,861,492

MOTORIZED ICE BIKE

Elmer R. Jensen, Sr., Toms River, N.J., assignor to Raymond Lee Organization Inc., New York, N.Y.

Filed Jan. 16, 1973, Ser. No. 324,058

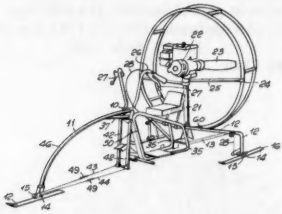
Int. Cl. B62m *27/00*

U.S. Cl. 180—3 R **2 Claims**

1. A kit of parts for converting a wheeled motorized minibike to a motorized air propelled ice vehicle, with said parts being attachable to the frame of the mini-bike by means of mounting brackets, comprising a front outrigger unit and a rear outrigger unit, with

the front outrigger unit comprising a brace which is fitted by a bolt at its lower end to a flat skate mounted so as to be able to rotate in a vertical plane about the axis of the bolt, with the brace being formed in a curved shape so that at its upper end it is adapted to be attached to the mid-section of two vertical post members of the mini-bike frame, said post members being joined together, said brace by a fitting being joinable to the front neck of the mini-bike by U-bolts, with the upper end of each post member being curved to form a handlebar, and with

a tension cable, at one end, is adapted to be attached to the lower end of each post member, said cable, at the other end, is attached to the respective side end of the bolt which fastens the front skate to the brace to transfer horizontal steering torque between the front skate and the two post members, with



a rear outrigger unit which extends to each side of the vehicle when attached by mounting brackets to the rear of said frame of the mini-bike, with each side of the rear outrigger being curved in the vertical plane so that a rear skate may be attached to each side end of the outrigger, said attachment permitting the skate to rotate in a vertical plane, with a brake member fastened to each end of the outrigger and means to rotate the brake member in a vertical plane together with

a vertical post mounted in the mid-section of the rear outrigger to serve as a support for an attached motor mount platform at the upper end of said rear vertical post on which a gasoline motor and attached propeller may be mounted so as to propel the vehicle when operated.

3,861,493

ACOUSTICALLY ABSORBENT SHEET METAL STRUCTURAL BUILDING UNITS

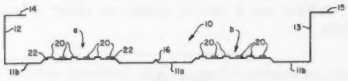
Harold James William Payne, Chester, England, assignor to H. H. Robertson Company, Pittsubrgh, Pa.

Filed Mar. 7, 1973, Ser. No. 338,985

Claims priority, application Great Britain, Mar. 7, 1972, 010532/72

Int. Cl. E04b *1/99, 1/74*

U.S. Cl. 181—33 G **7 Claims**



1. An acoustically absorbent sheet metal building unit adapted particularly to use as a horizontal liner tray, said unit having a base and a pair of perpendicular side walls, each having a parallel flange extending at right angles, one of which passes over the said base and the other of which passes away from the said base, said base including at least one medial strip which is offset from said base in the direction of said side walls, and plural offset segments provided solely in said medial strip and presented in the direction away from the said base and toward the said flanges.

3,861,494

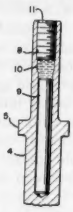
SOUND ABSORBING DEVICE

Thomas E. Grego, Waverly, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 19, 1973, Ser. No. 417,224

Int. Cl. E21c *13/00*

U.S. Cl. 181—33 A **1 Claim**



1. A sound absorbing device for a percussion member comprising:

a chamber within said member;

a fluid medium disposed within said chamber;

an inertial member disposed in said fluid medium;

means to adjustably limit the movement of said inertial member;

said percussion member is an impact tool work member such as a chisel;

said chamber within said percussion member is a cylindrical chamber;

said fluid medium is an oil lubricant;

said inertial member is a lead rod disposed in said chamber with sliding clearance;

said means to adjustably limit the movement of said inertial member comprises a screw adjustable oil retention plug axially disposed in said chamber.

3,861,495

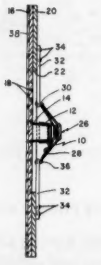
SOUND REPRODUCING DEVICE

John R. Pearson, Melrose, Mass., assignor to Floyd S. Poe, Linden, N.J.

Filed Nov. 1, 1973, Ser. No. 412,005

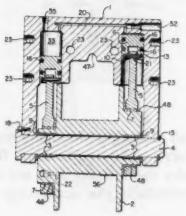
Int. Cl. G10k *13/00;* **H04r** *7/00*

U.S. Cl. 181—163 **8 Claims**



1. A sound reproducing device comprising a loud speaker embodying a diaphragm, a supporting member having a cut-out therethrough, said diaphragm being opposite said cut-out, connecting means connecting said diaphragm to said supporting member, a sound receiving panel opposite said cut-out, and sound transmitting tubular means attached to said diaphragm and to said panel.

3,861,496
FIRE ESCAPE DEVICE
Leon J. Hoover, P.O. Box 302, Gonzlas, La. 70737
Filed Dec. 10, 1973, Ser. No. 423,240
Int. Cl. A62b 1/12
U.S. Cl. 182—5 **7 Claims**



1. A lowering device useful as a fire escape means comprising

a. a substantially U-shaped frame having a hole through each leg near its end and in the base of said frame two cylindrical chambers with major axes parallel to said legs, said chambers opening to the inside of said frame and adjacent said legs, said chambers being connected by an internal passageway and containing a working fluid;

b. a shaft fixedly attached between the legs of said frame through the hole near the end of each leg;

c. a spool rotatably disposed about said shaft, said spool having a line-carrying core and two end flanges, said flanges having eccentric cam surfaces formed on each outer side;

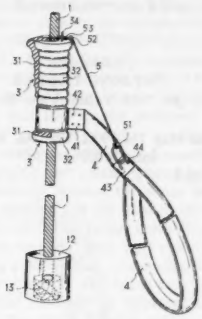
d. a reciprocable piston in each of said chambers;

e. connecting means rotatably disposed about each cam surface at one end and pivotally attached at the other end to a piston, whereby rotation of said spool reciprocates said pistons; and

f. restricting means in said internal passageway whereby rotation of said spool in response to a load applied to the attached line reciprocates said pistons forcing the working fluid from one chamber to another through said restricting means, thus exerting a braking force to regulate rotation of said spool and allowing the load to descend at a safe rate.

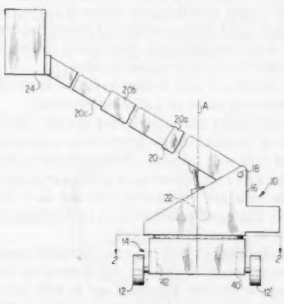
3,861,497
LIFE LINE
Shi-Cho Tsai, 667-80, Uiron-ru, Tainan-su, Taiwan
Filed Apr. 30, 1974, Ser. No. 465,569
Int. Cl. A62b 1/14
U.S. Cl. 182—5 **9 Claims**

1. A life line comprising a rope, a speed regulator, a safety belt and a checking steel wire, said speed regulator having a substantially cylindrical main body formed with a penetrating hole for passing said rope, said main body being made of a material permitting its inner peripheral surface to come into contact with said rope to thereby regulate descending speed when said main body is grasped by the hands, said safety belt being fixed to said main body, said checking steel wire having one end connected to said safety belt and the other end surrounding said rope and attached to a metal retainer fixed to said main body, said checking steel wire being engageable into said rope by the weight of the human body acting on said



safety belt when the hands are removed from said main body to thereby prevent the human body from dropping.

3,861,498
COUNTERBALANCING CHASSIS FOR AERIAL PLATFORM APPARATUS
John L. Grove, McConnellsburg, Pa., assignor to Fulton Industries, Inc., McConnellsburg, Pa.
Filed July 13, 1973, Ser. No. 379,151
Int. Cl. B66f 11/04
U.S. Cl. 182—141 **7 Claims**



1. Aerial platform apparatus comprising:

a. a chassis and ground engaging wheels supporting said chassis;

b. said chassis comprising:

i. a pair of longitudinally extending chassis members, each being a unitary, integral slab of metal having a vertical rectangular cross section;

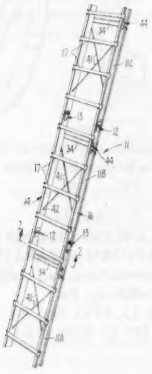
ii. front and rear transversely extending chassis members joined to said longitudinally extending chassis members adjacent the ends thereof; and

iii. front and rear intermediate transverse members extending between said longitudinally extending chassis members spaced apart approximately the same distance as said longitudinally extending chassis members and lying adjacent the longitudinal center of said chassis;

c. cylindrical support means extending upwardly from and supported on both said longitudinally extending members and both said intermediate transverse members, said cylindrical support means having a diameter substantially the same as said distance between said members.

d. rotatable boom support means on said cylindrical support means, and
e. a boom carried by said boom support means and having a platform on the outer end thereof.

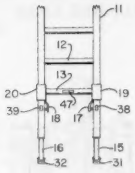
3,861,499
FOLDING LADDER
John O. Follett, Jr., 555 Valley View Dr., Medford, Oreg. 97501
Filed May 16, 1972, Ser. No. 253,801
Int. Cl. E06c 1/383
U.S. Cl. 182—163 **11 Claims**



1. A folding ladder, comprising a plurality of ladder sections formed for securing in end to end relation to provide a ladder; hinge means on said ladder sections formed for holding same in such end to end relation and permitting folding together of said ladder sections in accordion fashion;
retaining means on said ladder sections formed for selectively securing same in unfolded relation;
each of said ladder sections having spaced side rails,
a plurality of parallel rungs operatively connected between said side rails with freedom of movement to permit swinging of the side rails between an operative position wherein said side rails are continuous for use as a ladder and a relatively flattened position so as to facilitate said folding together in accordion fashion;
said side rails being oblong in cross-sectional aspect with the longer dimension of the oblong normal to the plane of said rungs when said side rails are in said operative position and parallel and adjacent to said plane when said side walls are in said flattened position;
said side rails having relatively narrow walls joined by a wider wall;
and said rungs being formed with a pivotal connection to one of said relatively narrow walls.

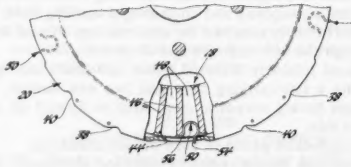
3,861,500
LADDER LEVELER
John P. Dempsey, 115 S. Pleasant St., Hingham, Mass. 02043
Filed Sept. 4, 1973, Ser. No. 394,295
Int. Cl. E06c 7/44
U.S. Cl. 182—204 **2 Claims**

1. An automatic locking ladder leveler in combination with a ladder comprising,
a metal ladder having U-shaped legs,
leveler legs for mating with said U-shaped legs which slide in and out of said U-shaped legs independently,
locking means for each leg for locking said leveler legs at selected positions independently of one another,
a movable first rung having means slidably mating with the outside of said U-shaped legs and contacting said locking means for automatically locking said locking mechanism of each leg in response to ladder use,



said movable rail locking said locking means when pressed down by a user's body weight when first ascending said ladder whereby the leveling legs are locked in use preventing automatically the accidental movement of the ladder.

3,861,501
DISC BRAKE DRIVE
Frank W. Brooks, Dayton, and James R. Baber, Miamisburg, both of Ohio, assignors to General Motors Corp., Detroit, Mich.
Filed Sept. 24, 1973, Ser. No. 399,970
Int. Cl. B60t 1/06
U.S. Cl. 188—18 A **4 Claims**

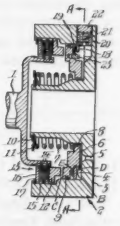


1. A disc brake having a peripherally mounted and driven brake disc and a rotatable dished disc drive and retainer member,
said retainer member having an open ended cylindrical section formed with circumferentially spaced pairs of internal lands having beveled edges extending axially thereof and further formed with apertures positioned intermediate said pairs of lands in circumferentially spaced relation,
said disc having opposed friction braking side surfaces joined by vanes defining therewith radially extending air-cooling passages opening through the disc outer periphery, and further having circumferentially spaced beveled lugs formed on the outer periphery and axially aligned with said pair of lands so that each lug is received between a pair of said lands in axially sliding and rotationally driving relation,
a plurality of resilient members having opposite end portions, each of said resilient members inserted into one of said apertures and one of said air-cooling passages with one of said end portions engaging an edge surface of said one of said apertures and the other of said end portions engaging a circumferentially opposite edge surface of said one of said air-cooling passages in resiliently loaded relation and acting substantially tangentially of said disc and said retainer member.

3,861,502
AUTOMATIC CLEARANCE ADJUSTING DEVICE FOR HYDRAULICALLY OPERATED DISC BRAKE

Takeo Hiramatsu; Kenji Yahata, and Shigeki Futaki, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha Mirato-ku, Tokyo, Japan

Filed Sept. 24, 1973, Ser. No. 399,976
Int. Cl. F16d *65/54*
U.S. Cl. 188—196 V **9 Claims**

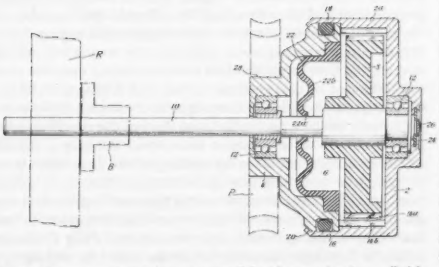


1. An automatic clearance adjusting device for a hydraulically operated disc brake, comprising a servo piston slidable by hydraulic pressure within a housing and operative on a disc of said brake, a return spring for returning said servo piston so as to release said brake upon release of the hydraulic pressure to said servo piston, an annular stopper provided in an annular pressure chamber of said servo piston and slidable in directions of movement of said servo piston, an abutting portion between said servo piston and said stopper for defining the distance of return movement of said servo piston, another abutting portion between said servo piston and said stopper being adapted to displace said stopper in operational direction of said servo piston in response to the wear of said brake disc, and an adjusting means fixed to the housing and movable by a spring effect upon the movement of said stopper in said operational direction and provided with an inclined notch at its periphery so as to prevent said stopper by a wedge effect from moving in said return direction, and resilient means mounted between said stopper and said servo piston and provided with a force greater than that of said adjusting means but weaker than the pressing force of said servo piston by said fluid pressure.

3,861,503
DAMPERS

Alan Richard Brine Nash, 39 Abbots Ride, Farnham, England

Filed Jan. 16, 1973, Ser. No. 324,104
Claims priority, application Great Britain, Jan. 21, 1972, 3017/72
int. Cl. F16f *9/52*
U.S. Cl. 188—276 **9 Claims**

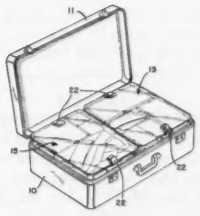


1. A damper comprising, in combination, a body, a fluid-filled chamber in the body, a rotor unit projecting into the chamber and bearing means locating said unit in a rotatable manner relative to the body, said rotor unit comprising a rotor, respective opposed surfaces of the body and of the rotor having a clearance between them such that a damping effect is provided by viscous shear of the chamber fluid between said surfaces resisting said relative rotation between the body and the rotor, respective series of axially extending grooves being provided on the radially outer region of said rotor surface and on an adjacent inwardly facing region of said body surface, the body comprising first and second members with at least a peripheral part of the first member overlapping a radially outwardly facing surface of the second member, an end portion of said peripheral part axially spaced from said grooves being radially inwardly defored to secure the members together, a sealing member for the fluid in the chamber being enclosed within the body and having mutually remote portions engaging the body and the rotor unit sealingly, one of said portions providing a sliding seal, said sealing member defining an end wall of the chamber and being provided with at least one circumferential corrugation intermediate said remote portions whereby the seal is flexibly deformable to a degree that permits it to compensate for changes of the chamber fluid volume with changes of temperature, the fluid having a viscosity that changes with temperature and the body being formed from metal and the displacement member being formed from a plastics material, said plastics material having a thermal expansion rate of about ten times that of the metal body so that there is a change in the clearance between said respective opposed surfaces which at least partly compensates for the associated fluid viscosity change with temperature whereby to reduce variations in the damping effect with change of temperature.

3,861,504
LUGGAGE WITH TRANSPARENT LINER

Marion C. McGraw, 1608 Shawnee Rd., Lima, Ohio 45805

Filed June 6, 1973, Ser. No. 367,555
Int. Cl. A45c *3/00*
U.S. Cl. 190—41 C **1 Claim**



1. In combination with a conventional suitcase having a cover of substantially the same length and width as the body of the suitcase and providing access to the entire interior of the suitcase when open, the improvement comprising shaped liner means positioned within and of the same size and shape as said interior of said suitcase, substantially filling said entire interior of said suitcase, a closure member for said liner means, handle means attached to said liner means and facilitating ready removal of said liner means from said suitcase, said liner means being formed from a transparent material permitting inspection of the contents thereof when said liner means is removed from said suitcase without removal of the contents from said liner means said liner means comprises a plurality of separate shaped liners which collectively are of the same size and shape as and fill the entire interior of said suitcase, each said separate liner having a pair of said handle means whereby each said liner can be removed independently of the other liners.

3,861,505

REEL ASSEMBLY FOR WINDING CABLE MOUNTED ON ELECTRIC EARTHMOVING MACHINE

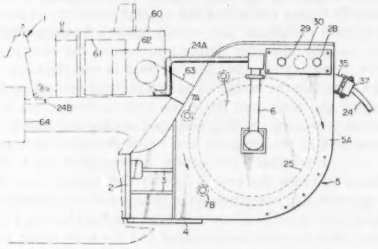
Ryo Sugimura, Tokyo, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed July 30, 1973, Ser. No. 383,884

Claims priority, application Japan, July 28, 1972, 47-88307

Int. Cl. H02g *11/00*

U.S. Cl. 191—12.2 R **8 Claims**



1. A reel assembly for winding an electrical cable onto and off of an earthmoving machine wherein the reel assembly comprises:

a rotary drum horizontally mounted in a frame positioned at the rear lower portion of the earthmoving vehicle, said rotary drum including connecting means therein for communicating electrical energy between a cable on said rotary drum and said earthmoving vehicle;

a cable winding port positioned above said rotary drum and receiving said cable therethrough, said cable winding port having a plurality of vertically arranged rollers on both sides of said port and also having a plurality of horizontally arranged rollers on the top and bottom of said port; an

a transverse head supporting said cable winding port operable to reciprocate said cable winding port horizontally above said rotary drum to guide said cable onto and off of said drum in a controlled manner.

3,861,506

FRICTION FREE WHEELS PROVIDED WITH DISENGAGEMENT OR LOCKING REVERSAL MEANS

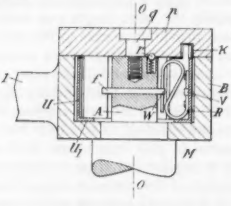
Michel Dossier, Orgeval, France, assignor to Agence Nationale de la Recherche (ANVAR), Paris, France

Filed Mar. 15, 1973, Ser. No. 341,738

Claims priority, application France, Dec. 22, 1972, 72.46028

Int. Cl. F16d *41/08*

U.S. Cl. 192—43 **17 Claims**



1. A reversible one-way rotary coupling, comprising a central shaft, a surrounding sleeve member relatively rotatable about the shaft, drive means interposed between said shaft and sleeve and selectively movable between two drive positions to selectively fix the sleeve and shaft to each other in one or the other direction of rotation, said drive means comprising shoes slidable over the surface of the sleeve member, and skids interposed between each shoe and the shaft and slidable over a flat surface carried by one of said shoe and shaft to permit movement of said drive means between their two drive positions, a reversing device mounted concentrically to said shaft and rotatable thereabout and with said drive means to selectively drive the shoes and skids in one direction or the other about said shaft between said two drive positions, and overcenter spring means interposed between said shaft and reversing device for ensuring movement of said reversing device from one drive position in one direction to the selected other drive position in the other direction, and for constantly exerting an elastic force on the shoes and skids in either selected drive position.

3,861,507

ACTUATOR DEVICE FOR USE IN A GAS TURBINE ENGINE FUEL CONTROL SYSTEM

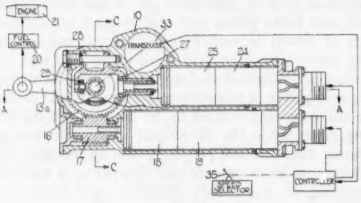
Joseph Louis Bloom, Droitwich, England, assignor to Lucas Aerospace Ltd., Birmingham, England

Filed July 5, 1973, Ser. No. 376,435

Claims priority, application Great Britain, July 5, 1972, 31387/72

Int. Cl. F16d *21/08*

U.S. Cl. 192—48.5 **6 Claims**



1. An actuator device for use in gas turbine engine fuel control, and comprising, in combination: a first angularly movable input member connected to a condition control lever for movement thereby, a second angularly movable input member connected to a speed control device for movement thereby, an angularly movable output member selectively connected to the first and second input member, dog means for interconnecting the second input member with the output member, resilient means acting on the second input member and the output member for urging the dog means out of interengagement and disconnecting the second input member and the output member, electromagnetic means for urging the dog means into interengagement and coupling means for interconnecting the first input member and the output member under the influence of said resilient means and arranged so that on de-energisation of the electromagnetic means when the output member is out of a datum position thereof the coupling means can be caused to be engaged to connect the output member to the first input member by turning of the first input in one direction to a datum position corresponding to the datum position of the output member and then turning the first input member in the opposite direction, and the arrangement being such that said dog means does not become fully disengaged until the first input member has been turned in said opposite direction to a position corresponding to the position of the output member.

3,861,508
ACTUATOR DEVICE FOR USE IN A GAS TURBINE ENGINE FUEL CONTROL

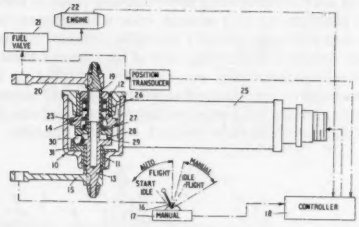
Joseph Louis Bloom, Droitwich, England, assignor to Lucas Aerospace Ltd., Birmingham, England

Filed July 5, 1973, Ser. No. 376,437

Claims priority, application Great Britain, July 5, 1972, 31386/72

Int. Cl. F16d *47/02*

U.S. Cl. 192—48.5 **9 Claims**



1. An actuator device for use in a gas turbine engine fuel control, comprising in combination: a body, first and second input members mounted on the body for independent angular movement relative thereto and directly connected to separate control devices, an angular movable output member mounted on the body for angular movement relative thereto and also axial movement relative thereto, dog means on said output member and said second input member for providing a driving connection therebetween, resilient means acting on said output member so as to tend to urge the output member in a direction to disengage said dog means, means actuable by said first input member for interengaging said dog mens whenever the first input member is in any position within one part of its range of movement relative to the body and permitting disengagement of said dog means whenever the first input member is in any position within another part of its range of movement relative to the body and coupling means for connecting the first input member to the output member under the action of said resilient member when the first input member is within said other part of its range of movement, said coupling means being operative for preventing axial movement of the output member under the action of said resilient means sufficient to fully disengage the dog means except when said first input member is brought into a position with said other part of its range of movement corresponding to the simultaneously position of the output member.

3,861,509
BALK RING FOR SYNCHROMESH APPARATUS

Yasuyuki Inoue, and Tomoaki Koshio, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

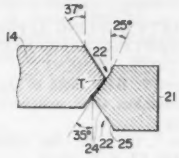
Filed May 21, 1973, Ser. No. 362,584

Claims priority, application Japan, May 19, 1972, 47-59332[U]

Int. Cl. F16d *23/02*

U.S. Cl. 192—53 F **3 Claims**

1. A balk ring for use in a synchromesh apparatus of the inertia lock type, wherein said balk ring is axially slidable on a clutch gear upon contact on one side by an axially slidable sleeve spline to effect synchronism with said clutch gear, and wherein said balk ring includes an inner peripheral tapered surface frictionally engaging the tapered cone of said clutch gear and being slidably supported thereby and said balk ring includes a plurality of outer peripheral splines formed with ridge-shaped chamfer surfaces as the end facing said sleeve, the improvement comprising: each of said chamfer surfaces including a first inclined plane extending from the apex of said chamfer surface and a second inclined plane extending from said first plane, and the chamfer angle of said first plane relative to a plane perpendicular to the direction of movement of said sleeve spline being larger than that of the second plane.



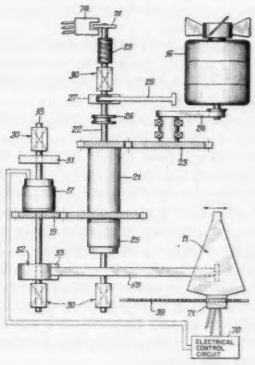
3,861,510
SERIAL PRINTER POWER DRIVE AND TIMING MECHANISM

Robert H. Wilczewski, Roselle, and James E. Blomquist, Park Ridge, both of Ill., assignors to Victor Comptometer Corp., Chicago, Ill.

Filed June 4, 1973, Ser. No. 366,473

Int. Cl. B41j *1/34*

U.S. Cl. 197—1 R **12 Claims**



1. In a high speed serial printer, a unidirectional motor and a print head supported for reciprocable translation from and return to a home position; power drive and timing mechanism comprising a first shaft mounting gearing rotatable by said motor and a first clutch operable to rotate said shaft; a second shaft mounting gearing rotatable by said motor and a second clutch operable to rotate said second shaft; transport means including a takeup reel mounted on said first shaft and flexible drive means interconnecting said takeup reel and said print head for translating the latter in one direction, and spring means connected to said print head for returning the latter to said home position, said first clutch being deenergized at different times to effect return of said print head after a full or any partial line of printing has been effected and further being energized by said timing mechanism if the return velocity of said print head exceeds a predetermined value, said second clutch being energized to actuate ribbon and paper drive means while said print head is being returned to said home position; plastic bearings having longitudinally extending bores receiving said shafts exteriorly of said gearing mounted thereon; and an injection molded plastic base having slots for receiving said plastic bearings and retaining the longitudinal ends thereof in snap-fitted engagement therein to limit

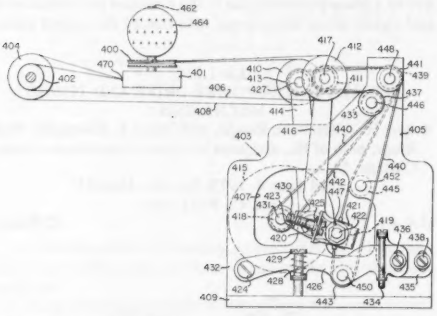
longitudinal movements of said shafts and said gearing mounted thereon.

3,861,511

ROTATIONAL SHAFT COUPLING APPARATUS WITH ADJUSTABLE COUPLING RATIO AND POSITIVE DISPLACEMENT

Carl R. Nelson; Robert V. Hery, both of Derby, Kans., and Joseph V. Baum, Columbus, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 7, 1973, Ser. No. 338,656
Int. Cl. B41j *23/02*
U.S. Cl. 197—16 **12 Claims**



1. Adjustable coupling ratio positive displacement apparatus for transmitting limited rotational movement of a first rotatable shaft member to a second rotatable shaft member, said apparatus comprising:

first lever arm means mounted on said second rotatable shaft member to rotate therewith;

first receiving and diverting means mounted on said first lever arm means at a point displaced from the rotational axis of said second rotatable shaft member for receiving force from and diverting the path of a flexible tension member and for enabling lengthwise movement of said flexible tension member past said point;

a first flexible tension member engaging both said first rotatable shaft member and said first receiving and diverting means, said first flexible tension member being played out and retracted by said first rotatable shaft member at one end thereof and being connected to an anchor point at the second end thereof;

tension member displacing means cooperating with said first lever arm means and located between said second rotatable shaft member and said first receiving and diverting means for altering the length of said first flexible tension member existing between said first receiving and diverting means and said anchor point in response to rotation of said first lever arm means.

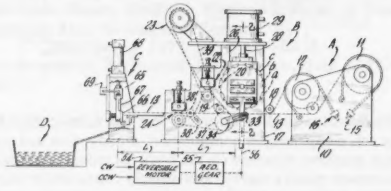
3,861,512

LABEL-MAKING MACHINE

Peter Coriasco, Brooklyn, and Heinz Haselbarth, Glendale, both of N.Y., assignors to Supreme Equipment & Systems Corp., Brooklyn, N.Y.

Filed Aug. 10, 1972, Ser. No. 279,702
Int. Cl. B41j *1/46*
U.S. Cl. 197—55 **19 Claims**

1. Printing means, comprising a rotatably indexible member having a series of different indicia at each of a plurality of angularly spaced index locations thereon, multiple-speed reversible rotary-drive means for said member, an anvil member, a frame including guide ways, a slide on said ways and supporting one of said members for movement to and away from coaction with the other member for a given indicium location, means for supporting web material between said members, reciprocating means connected to drive said members into and away from indicium-marking relation with said web, mechanical index-position locating mechanism coacting between said indexible member and said frame, such mechanism being enterable into index-locating relationship in the course of reciprocating approach of said members into indicium-marking relation and becoming free of index-locating relationship in the course of reciprocating retreat of said members from indicium-marking relation, said index-locating mechanism having a predetermined index-angle acceptance tolerance and including cam means operative to home said members to precision-location of indexed position during the course of such reciprocating approach and prior to achievement of indicium-marking relation, code-wheel means carried for rotation with said rotatably indexible member and having markings uniquely identifying each of said spaced locations, code-wheel reader means non-rotatably mounted to track code markings in the course of rotation, command means for selecting a code output corresponding to a selected one of the several indicium locations on said rotatable member, and



program means including a comparator connected for response to the difference between the command and reader outputs, said program means being responsive to a sensed difference between said outputs and determining (a) a relatively high-speed operation of said rotary-drive means and (b) the direction of rotation for which said difference is minimal, said drive means being operative during a separated relation of said members to drive said rotatably indexible member in the direction of minimal rotary displacement to reduce to zero the difference between the command and reader outputs, said program means being also operative upon subsequent comparator-sensed recognition of zero difference between said outputs to discontinue such high-speed operation and to determine a relatively slow-speed and directionally-reversed operation of said rotary-drive means, and said program means being finally operative to discontinue operation of said rotary-drive means upon the next comparator-sensed recognition of zero difference between said outputs, the index-positioning accuracy of said last-defined final operation being within said index-angle acceptance tolerance.

3,861,513

SYSTEM FOR DAMPENING RETURN MOTION OF A CARRIAGE

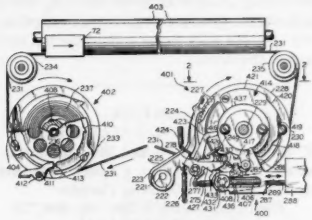
Arthur F. Riley, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Feb. 14, 1974, Ser. No. 442,511
Int. Cl. B41j *19/02*
U.S. Cl. 197—64 **5 Claims**

1. In combination with a system for dampening return movement of a carriage, of the type wherein the carriage is advanced a variable distance from a home position in a processing operation and then is driven back to the home position with a velocity that is an increasing function of the distance of carriage travel, and wherein the carriage-return movement is dampened by a dashpot system of the type having a dashpot plunger which is biased to extend out of a dashpot cylinder on carriage advance, and an actuating member which moves in synchronism with the carriage and engages a portion of the plunger near the end of the return stroke of the carriage to force the plunger back into the cylinder and thus dampen the

return movement of the carriage, an improved variable-stroke dampening mechanism which comprises:

an escapement device having a series of stops for engaging the dashpot plunger as it extends from the cylinder on carriage advance and limiting the travel of the plunger to a series of fixed stop positions; and



means for actuating the escapement device in accordance with the distance of carriage travel so that the plunger is extended increasing distances corresponding to increasing increments of carriage travel, and so that the volume of the fluid in the dashpot increases as carriage travel increases to provide increased dampening for increased distances of carriage return.

3,861,514

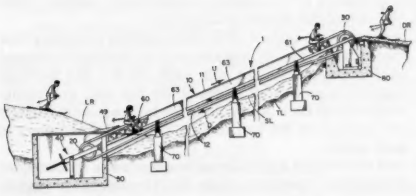
STRADDLE-FORM SKI LIFT

Robin D. Ling, R.F.D., Campton, N.H. 03223

Filed Sept. 27, 1971, Ser. No. 183,783

Int. Cl. B61b *11/00;* **B66b** *9/12;* **B65g** *17/00*

U.S. Cl. 198—16 R **10 Claims**



1. Ski lift apparatus for conveying skiiers up a hill comprising, in combination:

Means forming a conveyor belt sized for straddle seating thereon by skiiers,

Belt support means supporting the belt to provide an uphill run thereof,

Belt driving means for driving the uphill run of the belt in an uphill direction,

Means for braking the uphill run of the belt against downhill motion,

Ski track defining means forming ski tracks adjacent to and on opposite sides of the belt and constructed and arranged so that the skiier can sit on the belt in saddle fashion while sliding his skiis in the tracks on both sides thereof, and

on-load and off-load defining means at respective lower and upper ends of the uphill run of the belt arranged in line with said belt so that the skiier can ski directly onto the belt for on-loading and then sit down and stand up and ski directly off the belt at the top of the uphill run.

3,861,515

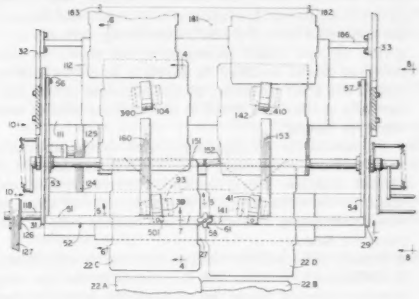
MACHINE FOR ARRANGING CARTON BLANKS IN STREAMS

Kenneth R. Runyan, Dayton; Quentin E. Honnert, Cincinnati, and Ronald H. Porter, Milford, all of Ohio, assignors to Multifold-International, Inc., Milford, Ohio

Filed Mar. 5, 1973, Ser. No. 338,073

Int. Cl. B65g *47/26, 57/11*

U.S. Cl. 198—34 **5 Claims**



1. In a machine for arranging carton blanks in streams shingle fashion as the carton blanks are delivered by a biank forming machine at a predetermined rate in adjacent streams, the combination comprising means for engaging the carton blanks of each stream and for advancing the carton blanks sidewise of the direction of carton blank advance to form spaced streams and for accelerating the rate of carton blank advance to a speed greater than the predetermined speed so that the carton blanks in each stream separate end from end, diverter member means in the path of the streams, the diverter member means including a guide plate portion extending transversely of the direction of stream flow for diverting the carton blanks of each stream so that the trailing edge of each carton blank is spaced from the leading edge of the next following carton blank transversely thereof and of the direction of stream flow and means for advancing the carton blanks of each stream from the diverter member means at a rate less than the predetermined rate, the guide plate portion of the diverter member having a normally stationary guide surface which is upwardly inclined in the direction of sheet travel to raise the trailing edge of the slower moving carton blank relative to the leading edge of the faster moving succeeding carton blank to allow the leading edge of the succeeding carton blank to underly the trailing edge, so that the carton blanks overlap to form shingled streams.

3,861,516

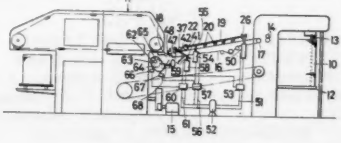
APPARATUS FOR FEEDING SHEETS OF PAPER OR THE LIKE INTO A PUNCHING MACHINE IN NEAT STACKS

Tadao Inose, and Minoru Hirota, both of Ibaragi-ken, Japan, assignors to Kabushiki Kaisha Iijima Seisakusho, Ibaragi, Japan

Filed Nov. 21, 1972, Ser. No. 308,410

Int. Cl. B65g *57/30;* **B65h** *29/66*

U.S. Cl. 198—35 **6 Claims**



1. Apparatus for feeding sheets of paper or the like into a sheet-processing machine in successive neat stacks, said appa-

ratus being provided with supply means for successively supplying the sheets in an underlapping relationship, said apparatus comprising in combination:

conveyor means onto which the sheets are successively loaded at one extremity thereof in and underlapping relationship from said supply means, said conveyor means including a plurality of side-by-side parallel spaced endless belts which are moving continuously;

a substantial array of first rollers rotatably supported by frame means above said conveyor means, said frame means being pivotably supported only at one end thereof, the remainder of said frame means being normally supported by said rollers resting upon the sheets on said conveyor means, to cause the sheets to be fed by friction toward the other extremity of said conveyor means substantially at the same speed as said endless belts of said conveyor means;

first lift means for pivoting said frame means upwardly about said one end thereof to raise said first rollers out of contact with the sheets on said conveyor means and hence to cause the sheets to be fed at reduced speed in substantial sliding contact with said endless belts of said conveyor means;

stop means positioned intermediate between the extremities of said conveyor means, said stop means including a stop member disposed below the plane of the sheet-carrying surfaces of said endless belts of said conveyor means so as to be capable of moving upwardly through the spacings of said endless belts for temporarily arresting the motion of the sheets being successively conveyed thereby at reduced speed and hence for forming a stack of a predetermined number of the sheets;

means for moving said stop member up and down through the spacings of said endless belts of said conveyor means;

resilient means rotatably supporting a plurality of second rollers above said conveyor means adjacent said other extremity thereof, said resilient means being adapted to urge said second rollers toward the sheet-carrying surfaces of said endless belts of said conveyor means to cause each stack of sheets formed by said stop means to be fed by friction toward said other extremity of said conveyor means; an

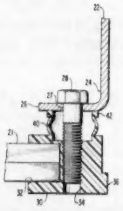
second lift means for raising said second rollers off the stack of sheets on said conveyor means against the force of said resilient means to permit the stack of sheets to be readjusted into proper register with the aid of the conveying motion of said conveyor means.

3,861,517

ROLLER ADJUSTMENT ADAPTOR FOR SCREW ADJUSTMENT OF BELT DRIVEN LIVE ROLLER CONVEYOR ROLLS

Frederik Theijsmeijer, Ellwood City, Pa., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Mar. 22, 1974, Ser. No. 454,034
Int. Cl. B65g *13/07*
U.S. Cl. 198—127 R **8 Claims**



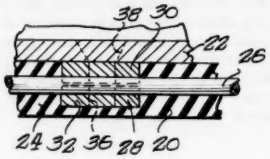
1. In combination with a belt driven, live roller conveyor assembly of the type including a series of driven rollers journalled between a pair of side frames, a series of snubbing rollers journalled on axles between the frames at a level below the driven rollers, a drive belt between the driven and snubbing rollers, and means for vertically adjustably mounting the snubbing rollers from the frame including a clip attached to each frame above the axis of each snubbing roller, and an adjustment screw for attaching the clip to the snubbing roller axle, the improvements comprising: a one-piece molded plastic adaptor having a hole for holding the axle of the snubbing roller and having another hole for receiving the adjustment screw, an integral cylindrical shaped neck extending upwardly toward the clip, the neck being collapsible but resilient upon adjustment of the screw.

3,861,518

CONVEYING APPARATUS

David W. Dibben, Bellesville, and Madhusudan R. Bastikar, Willowdale, both of Ontario, Canada, assignors to Borg-Warner Ltd., Oakville, Ontario, Canada

Filed Oct. 15, 1973, Ser. No. 406,726
Int. Cl. B65g *17/12*
U.S. Cl. 198—151 **2 Claims**



1. In a bucket wheel reclaiming apparatus which comprises a pair of spaced and supported pulleys, an endless loop belt of flexible and elastic material having an inner loop layer with a surface entrained to pass over and engage said pulleys, and said belt having a plurality of longitudinally extending and laterally spaced reinforcing cables embedded therein with the cables outwardly of the pulley engaging inner surface of the belt, the improvement which comprises:

a. the inner loop surface of flexible material inwardly of the cables being formed imperforate and arranged to engage each pulley across the full width of the belt between laterally spaced outer edges of the belt and to continuously engage each pulley along the full longitudinal length of a portion of the belt turning around the periphery of each pulley;

b. said belt having a plurality of longitudinally spaced apart discontinuous portions of the flexible material projecting outwardly of the inner continuous loop surface to encompass the cables and project outwardly of the cables;

c. clamping means located outwardly of the inner continuous loop surface and in spaces between the discontinuous portions of the flexible material with said clamping means being securely attached directly to said cables, and an outer surface of the clamping means comprising a plate exposed outwardly of said belt along the entire lateral width of the plate and with the plate spanning the entire distance between the edges of said belt; and,

d. a bucket removably secured to the exposed outer surface of the clamping means plate and thus to the belt.

3,861,519

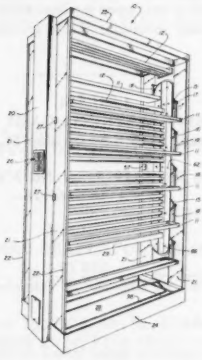
DISPLAY CABINET, TRACK AND CONTROLS

Richard Louis Ware, 2180 Middlefork Rd., Northfield, Ill. 60093

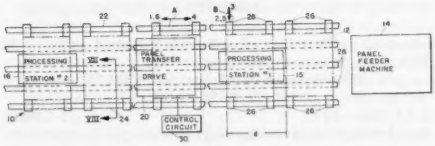
Filed Sept. 20, 1972, Ser. No. 290,741
Int. Cl. B65g *17/00*
U.S. Cl. 198—158 **7 Claims**

1. A display cabinet and track assembly comprising,

a pair of opposed end columns,
each column having a U-shaped column member with side walls and a base,
said side walls terminating in an outwardly turned end forming one wall of a bracket guide,
brackets of U-shaped configuration formed for mounting to the column side walls to cover the open portion opposed from the base and an offset portion at the intersection of the side mount and base,
outside panels for mounting to the bracket bases and having a track base secured thereto and in perpendicular relationship to said panels and offset from the outer edge to define a bracket guide flange,
a drive member in the form of a chain,
said track base, offset end, and column guide wall defining a track channel,
brackets secured to the chain for holding a plurality of trays, said bracket guide flange and said outwardly turned column edges defining a bracket guide,
whereby the column serves to support the end of the display cabinet and in combination with the outside panels provides a track guide for the chain and bracket guide for the brackets.

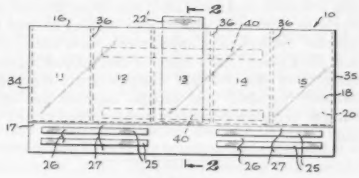


3,861,520
TRANSFER APPARATUS
Robert L. Ballard, 2205 Heather St., S.E., Grand Rapids, Mich. 49506
Filed Apr. 25, 1973, Ser. No. 354,213
Int. Cl. B65g *25/04*
U.S. Cl. 198—218 **14 Claims**



1. Apparatus for sequentially transporting a series of spaced workpieces along a path in a stepwise incremental fashion comprising:
a pair of spaced transfer rails, extending the length of the desired path of movement of a workpiece;
means including a support frame for slidably supporting said transfer rails;
carriage means coupling said transfer rails for simultaneous motion;
carriage support means for supporting said carriage means to permit reciprocation thereof in a path parallel to said transfer rails;
stabilizing means coupled between said frame and said carriage means to prevent any significant skewing of said carriage means as it reciprocates;
first drive means coupled to said carriage means and including a yoke for reciprocating said rails between forward and rearward positions in a substantially sinusoidal manner and through a distance selected for the desired incremental motion of the workpiece;
a plurality of gripping members coupled to and spaced along said transfer rails and movable between article gripping and article releasing positions;
second drive means for simultaneously actuating said gripping members to grip or release a workpiece;
means for sequentially actuating said first and second drive means to sequentially grip a workpiece, advance the workpiece, release the workpiece and return said rail to a rearward position before a successive workpiece is gripped; and
workpiece support means positioned between said transfer rails for supporting a workpiece when released by said gripping members.

3,861,521
DISPOSABLE SUTURE ORGANIZER
Mildred V. Burtz, 1118 S. Rexford Dr., Apt. 5, Los Angeles, Calif. 90035
Filed Apr. 17, 1973, Ser. No. 351,870
Int. Cl. A61b *19/02*; **B65d** *31/12*
U.S. Cl. 206—63.3 **10 Claims**

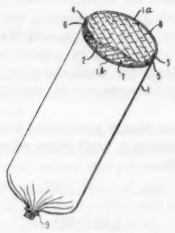


1. A suture-package organizer for use in combination with suture packages, comprising:
a sterilizable unitary structure defining a plurality of pockets, each pocket having a permanently opened opening; a plurality of individual closed suture packages of the type used in surgery, each package containing at least one needle enclosed therein, each pocket of said structure being adapted to hold therein at least one of said suture packages, each package being insertable in and removable from any of said pockets through the pocket's permanently opened opening; and
needle holding means connected to said structure for holding all the suture needles after their use in the surgery.

3,861,522
COMPARTMENTED PACKAGE HAVING VARIABLE-VOLUME COMPARTMENTS
Walter E. Llewellyn, Hammond, La., and Frank M. Willis, Hedgesville, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 16, 1972, Ser. No. 281,166
Int. Cl. B65d *77/08*, *31/12*
U.S. Cl. 206—219 **13 Claims**

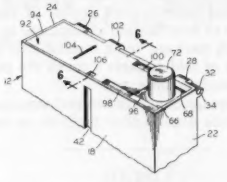
1. A compartmented package comprising

a. a tubular member made of pliable film material and having a substantially circular transverse cross-section;
b. a diaphragm made of pliable film material longitudinally disposed within said tubular member substantially from one end thereof to the other and sealed to the wall thereof so as to form two substantially diametrically opposed continuous linear junctures which are substantially parallel to the longitudinal axis of said tubular member and which extend substantially from one end thereof to the other; and
c. fluent materials of different composition within said tubular member in two adjacent compartments therein, each of said compartments being defined by said diaphragm, said two linear junctures and a portion of said tubular member therebetween, materials of different



composition being located in different compartments, the quantity of said materials in said tubular member being sufficient to produce a substantially circular transverse cross-section therein, the transverse dimension of said diaphragm between said junctures being at least equal to the length of an arc of the circle of transverse cross-section of said tubular member, which arc is defined by said junctures, and said diaphragm being adapted to move freely in transverse planes with respect to said tubular member before said compartments have been loaded so that, for a given total volume of said tubular member, the volumes of the different compartments may be made infinitely variable; said tubular member and said diaphragm being cooperatively gathered and closed at each end.

3,861,523
CASE FOR CIGARETTES AND CIGARETTE SUBSTITUTE
Mary Fountain, 122 Hamilton St., Southbridge, Mass. 01550, and Ruth Radei, 65 Union St., Moosup, Conn. 06354
Filed Feb. 9, 1973, Ser. No. 331,230
Int. Cl. B65d *51/20, 79/00, 85/10*
U.S. Cl. 206—236 **11 Claims**



1. A cigarette case for carrying cigarettes and a substitute therefor comprising:
a. a housing having a sidewall, a bottom wall and a partition means extending between portions of said sidewall to define a plurality of side-by-side open-topped compartments including at least one compartment for holding a plurality of cigarettes and a second compartment for holding a cigarette substitute;
b. a cover adapted to span the open top of said housing mounted on said housing for movement between a closed position and an open position; and
c. means for preferentially exposing a cigarette substitute of said second compartment when said cover is moved from said closed position to said open position, said preferential exposure means comprising selector means mounted on said housing beneath said cover for movement between a first position wherein the contents of said cigarette compartment are exposed in the open position of said cover and a second position wherein the contents of said second compartment are exposed in the open position of said cover, and means permitting movement of said cover to said closed position only when said selector means is in said second position whereby upon movement of said cover to said open position from said closed position a cigarette substitute of said second compartment is exposed.

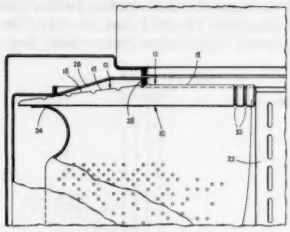
3,861,524
PORTABLE SECTIONAL GAME BOARD
James F. Coleman, 5215 S.E. Division St., Portland, Oreg. 97206
Filed July 5, 1973, Ser. No. 376,357
Int. Cl. A63b *69/36*
U.S. Cl. 206—315 **5 Claims**

1. A portable sectional game board device comprising:
at least three game board sections including a first ramp section, a second target section and a third carrying case section,
said ramp section being of flat rigid board-like construction and being hinged at one end to an upper end of said target section so that said ramp section can be folded over said target section for carrying and so that when said ramp section is unfolded it forms a longitudinal continuation of said target section along an inclined plane from said target section downwardly to a supporting surface,
said target section including a playing surface portion defining an inclined playing surface with a target pocket therein and a flat rigid backing member supporting said playing surface portion,
said carrying case section being of open rectangular box-like construction with an end of said backing member remote from said ramp section being hinged to an end of said case section and said case section having upstanding side and end walls of a height such that said ramp and target sections can be folded into and contained within said case section with said backing member forming a cover for said case section.

3,861,525
PACKING WEDGE
Herbert S. Collin, c/o Collin Box & Supply Company, 56 Bristol St., Newton, Mass. 02118
Filed June 18, 1973, Ser. No. 370,973
Int. Cl. B65d *85/00*
U.S. Cl. 206—320 **5 Claims**

1. A bracing device comprising:
an elongate member formed from a relatively rigid foamed plastic material, said member having a substantially flat bottom wall, side walls, a top wall and inner and outer ends;
said top wall of said member having a portion thereof extending from an end of said member and which lies substantially in a plane which defines a wedge in cooperation with said bottom wall of said member at that end thereof;

and



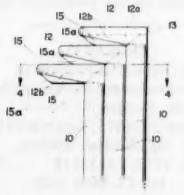
means forming a plurality of transverse, longitudinally spaced grooves along said portion of said top wall of said member.

3,861,526

NAIL STRIP AND NAIL SHAPED FOR ARRANGEMENT IN STRIP

Walter Hermann Leistner, 97 Alamosa Dr., Willowdale, Ontario, Canada

Filed Oct. 20, 1972, Ser. No. 299,446
Int. Cl. B65d *85/24*; **F16b** *15/02*, *15/08*
U.S. Cl. 206—343 **8 Claims**



1. A nail of the type designed to be formed into a strip of such nails, and adapted to be delivered by means of a power operated nailing gun or the like device, said nail comprising:

a nail shank;

a point on one end of said shank;

a flattened head on the other end of said shank, said head having upper and under sides and a perimeter of generally incomplete circular shape, thereby defining a free space extending to said shank, whereby said nail may be associated with other said nails to form a nailing strip, with portions of the heads overlapping one another, and the shanks of said nails in side to side contact with one another, and,

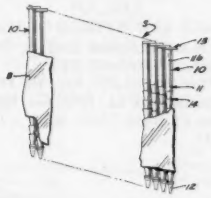
an elongated ridge member formed on the underside of said head, said ridge member defining a surface lying in a plane parallel to the plane of the upper side of said head and contacting the upper side of the head of a next adjacent nail when said nails are formed together as aforesaid said ridge member lying on an axis bisecting said incomplete circular shape of said head whereby to align with ridge members of other said nails when formed into a nailing strip as aforesaid.

3,861,527

PACKAGE OF COLLATED FASTENERS

Garry R. Perkins, Palatine, Ill., assignor to Spotnails, Inc., Rolling Meadows, Ill.

Filed Dec. 4, 1972, Ser. No. 311,623
Int. Cl. B65d *85/24*
U.S. Cl. 206—344 **2 Claims**



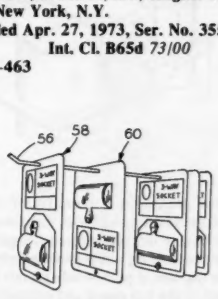
1. A package of collated fasteners of like configuration arranged in parallel side-by-side relation to form a flexible strip, a flexible bond coating applied to said fasteners to retain same in said relation, each fastener including an elongated shank to which the coating is applied, said shank having a trailing end and a pointed leading end, and an enlarged head formed on the trailing end of said shank; said shank being provided with a plurality of longitudinally spaced barbs, each barb having a continuous outer extremity and a continuous inner extremity, both said outer and inner extremities completely encircling said shank, said outer and inner extremities being disposed in spaced parallel planes substantially transverse to the longitudinal axis of said shank, the portion of said shank intermediate adjacent barbs extending from the outer extremity of one barb to the inner extremity of an adjacent barb and being gently tapered at an angle not exceeding about five degrees towards the axis of said shank and towards the leading end thereof; the outer extremity of each barb being disposed a greater distance from the shank leading end than the inner extremity of said barb, whereby segments of the applied coating are keyed to the tapered portions of the shanks adjacent the inner extremities of the barbs thereof; each enlarged head of said fasteners having a flattened peripheral segment disposed in substantial tangential relation with the periphery of the shank trailing end; the flattened peripheral segment of one head being in substantial engagement with the shank exterior of the adjacent succeeding fastener of the package.

3,861,528

INVERTABLE CARDED BLISTER PACKAGE

K. Joseph Damuth, Cranston, R.I., assignor to General Electric Company, New York, N.Y.

Filed Apr. 27, 1973, Ser. No. 355,219
Int. Cl. B65d *73/00*
U.S. Cl. 206—463 **8 Claims**

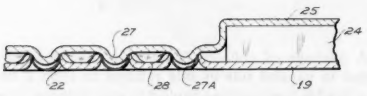


1. A package for display of articles on merchandise display hooks which comprises,

a card having a product display window therein,

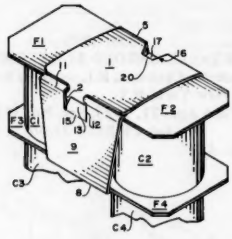
means for supporting the product in the window in said card so that it can be viewed from either side of said card,
a panel of product information imprinted on each side of said card, the panel being inverted on one side with reference to that on the other,
and a hang-hole located at each end of said card.

3,861,529
PACKAGE AND METHOD OF MAKING
Eugene W. Coleman, Richmond Heights, Ohio, assignor to Picker Corporation, Cleveland, Ohio
Continuation of Ser. No. 83,891, Oct. 16, 1970, abandoned. This application Feb. 12, 1973, Ser. No. 331,701
Int. Cl. B65d *73/00;* **B32b** *3/30*
U.S. Cl. 206—471 **12 Claims**



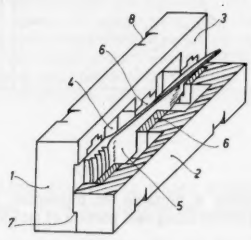
1. A package comprising first and second substantially imperforate thermoplastic sheets extending into contact in regions around an object interposed between said sheets, said first sheet having formations thermoformed from the material of the sheet, extending out of the plane of the sheet toward and into contact with the other sheet in regions around said object, and at least some of said projections of the first sheet being partially collapsed to form a generally cylindrical upstanding wall portion merging into a concavity, and said second sheet having thermoformed portions extending into firm intimate contact with the extending and partially collapsed portions of the projections of said first sheet to provide a firm connection between said sheets in regions around said object.

3,861,530
ARTICLE CARRIER
Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Sept. 14, 1973, Ser. No. 397,166
Int. Cl. B65d *85/62*
U.S. Cl. 206—499 **9 Claims**



1. A carrier for packaging a plurality of flanged articles arranged in two coincidental tiers with each tier comprising at least two articles having interconnected flanges at their upper ends, said carrier comprising a top panel overlying the tops of the articles of the top tier, a pair of side panels interconnected with the side edges of the top panel and extending downwardly with their lower edges at approximately the level of the tops of the articles in the lower tier, and a retaining strap having its ends joined respectively to the lower edges of said side panels and disposed below the interconnected flanges and between the side walls of adjacent articles in the lower tier.

3,861,531
STORAGE AND TRANSPORT CONTAINER FOR THE BLADES OF FLUID FLOW MACHINE
Hans Bellati, Wettingen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland
Filed Dec. 13, 1972, Ser. No. 314,578
Claims priority, application Switzerland, Dec. 31, 1971, 19236/71
Int. Cl. B65d *81/16*
U.S. Cl. 206—523 **1 Claim**

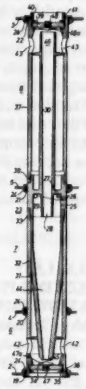


1. A reusable combined storage and transport container for blades or a fluid flow machine, said container having a parallelepiped configuration and being constituted by two longitudinally extending halves cast from an expandable synthetic resin which when fastened together establish a cavity for receiving the blade but which is larger in certain directions than corresponding surface portions of the blade thus leaving a space therebetween to facilitate placement of the blade in and its removal from the cavity, and a plurality of replaceable support members arranged in longitudinal spaced relation along the blade in said space and which fill out the corresponding portions thereof between the surface of the blade and the corresponding surface portions of the cavity.

3,861,532
VORTEX SEPARATOR
Karl Arvid Skardal, Stocksund, Sweden, assignor to AB Fractionator, Stockholm, Sweden
Filed Oct. 25, 1973, Ser. No. 411,355
Claims priority, application Sweden, Nov. 6, 1972, 14346/72; Sept. 28, 1973, 73132615
Int. Cl. B04c *5/28*
U.S. Cl. 209—211 **13 Claims**

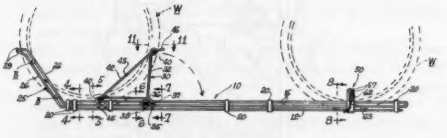
1. A vortex separator, particularly for separating fibrous suspensions, comprising a plurality of individual separator units, each including an at least partially conical vortex chamber having at its larger end at least one substantially tangential inject inlet for the suspension to be treated and an axial accept outlet for a lighter fraction of the treated suspension and at its smaller end an axial reject outlet for a heavier fraction of the treated suspension; a common inject compartment for the suspension to be treated communicating with the inject inlets of all said individual separator units; a common accept compartment for said lighter fraction communicating with the accept outlets of all said individual separator units; and a common reject compartment for said heavier fraction communicating with the reject outlets of all said individual separator units, said compartments being arranged side by side with said reject and accept compartments located on opposite sides of said inject compartment, each of said individual separator units having an elongated external casing enclosing said conical vortex chamber and having sealed axial ends and an uniform external cross-sectional profile over its entire length, each individual separator unit extending completely through said reject, inject and accept compartments in aligned openings in the walls between the inject compartment and the reject and accept compartments respectively, and in the outer walls of the reject and accept compartments furthest removed

from the inject compartment, whereby both axial ends of the separator units are accessible from the outside of said outer walls of the reject and accept compartments and the separator units can be pushed axially into and out from said compartments through said openings in the compartment walls, the external casing of each separator unit being provided with at least one reject port communicating with the reject outlet of



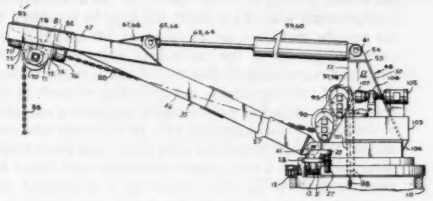
the vortex chamber and positioned in the portion of the separator unit located within the reject compartment, at least one inject port communicating with the inject inlet of the vortex chamber and positioned in the portion of the separator unit located within the inject compartment, and at least one accept port communicating with the accept outlet of the vortex chamber and positioned in the portion of the separator unit located within the accept compartment.

3,861,533
BICYCLE RACK
John R. Radek, Hinsdale, Ill., assignor to Ready Metal Manufacturing Co., Chicago, Ill.
Filed May 16, 1973, Ser. No. 360,823
Int. Cl. A47f *7/00*
U.S. Cl. 211—20 **6 Claims**



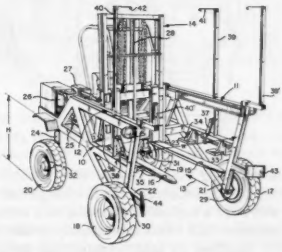
1. A bicycle rack comprising
a. a substantially horizontal elongated support having a base portion and upstanding side portions adapted to support both wheels of a bicycle,
b. a wheel stopping bumper portion on one end of said support,
c. a rockable cradle pivotally mounted on said base portion between said side portions in proximity to said bumper portion and comprised of a pair of arms extending angularly from a pivotal junction,
d. guide means in the form of a substantially closed elongated loop affixed to said arms remote from said pivotal junction for engaging the rim of said last-mentioned wheel, said guide means being secured to said arms at a predetermined distance from said pivotal junction, and
e. a pivot pin mounted in and extending between said side portions for sliding movement longitudinally of the support for accommodating said pivotal junction, so that the rolling of said last-mentioned wheel into said rockable cradle, with one of said arms in juxtaposition to said base portion, against the other arm, effects a rocking of said cradle to bring the latter arm into juxtaposition with the base portion, permitting the forward part of said last-mentioned wheel to engage said bumper portion.

3,861,534
DAVIT, PARTICULARLY FOR MARINE USE
J. C. Birdwell, 8535 Glencrest, Houston, Tex. 77017
Filed Apr. 9, 1973, Ser. No. 348,996
Int. Cl. B66c *13/10;* **B66d** *1/48*
U.S. Cl. 212—1 **26 Claims**



1. Crane, comprising a longitudinal boom supported at its inner end, first chain drive means adjacent said inner end of said boom, second chain drive means at the outer end of said boom, chain means extending under tension between said first and second chain drive means and extending at its inner and outer ends beyond said first and second chain drive means, said first and second chain drive means each being operable to move said chain means longitudinally in either direction while maintaining said chain means tensioned therebetween, control means for automatically delaying starting in operation of the trailing one of said first and second chain drive means, with respect to the direction of chain travel, upon starting the chain means in movement in either direction, whereby slack cannot develop in the chain means and the chain means will continuously be maintained tensioned, the portion of said chain means extending beyond said second chain drive means being connectable to an object to be supported or pulled by the crane.

3,861,535
STRADDLE FORK VEHICLE
Thomas C. Huxley, III, Camarillo; Duane L. Garber, Port Hueneme, and Thomas C. Huxley, IV, Camarillo, all of Calif., assignors to Ag. Automation, Camarillo, Calif.
Filed June 29, 1973, Ser. No. 374,990
Int. Cl. B65g *57/32*
U.S. Cl. 214—6 B **7 Claims**



1. A straddle fork vehicle vehicle for picking up, transporting, and depositing pallet bins designed to hold produce during harvesting operations, comprising, in combination:
a. a frame structure of generally rectangular shape when viewed in plan including first and second horizontally

forwardly extending rail structures spaced in parallel relationship to define a front opening of width sufficient to receive a pallet pin;

b. a fork lift assembly mounted on the rear portions of the rail structures with fork prongs extending forwardly and movable vertically up and down to pass between said rail structures;

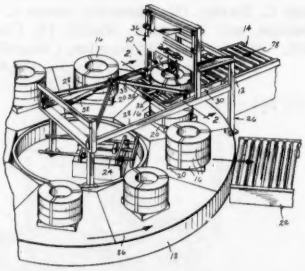
c. front and rear vehicle wheels mounted to the lower front end portions of the rail structures and to the rear corners of the frame structure respectively, and spaced relative to the frame structure and each other to provide a vertical clearance between the underside of the frame structure and the ground of greater height than the height of a pallet bin such that the vehicle can ride over a pallet bin, the wheels passing on either side of the bin in a straddling configuration whereby a pallet bin may be straddled by the vehicle and lifted up by said fork lift assembly, the center of gravity of the pallet load being between the front and rear wheels so that the vehicle is stable without the use of counterweights the mounting of each of the rear wheels including swivel means permitting swiveling of the wheel about a vertical axis; pivot means interconnecting the swivel means for each wheel, said pivot means being pivoted to a rear central portion of said frame for movement about an axis extending in a forward and rearward direction whereby the frame may remain in a substantially level position should one of the rear wheels encounter a rut; and,

d. means on said frame coupled to said fork lift assembly to move it horizontally forwardly and rearwardly along said rail structures such that the fork prongs may extend beyond the front ends of the rail structures to permit the fork lift assembly to operate in the same manner as a conventional fork lift.

3,861,536
TRANSPORTING DEVICE FOR ITEMS OF COILED MATERIAL

Harold R. Braner, Chicago; William C. Jasinski, Arlington Heights; Douglas S. Matsunaga, and Roy F. Lo Presti, both of Chicago, all of Ill., assignors to Braner Engineering Inc., Chicago, Ill.

Filed July 19, 1973, Ser. No. 380,582
Int. Cl. B65g *57/00*
U.S. Cl. 214—6 G **9 Claims**

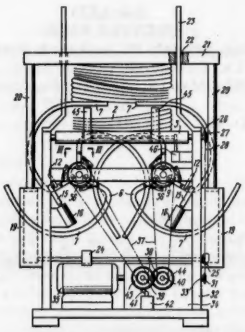


1. A transporting device for items of coiled material, said transporting device located at the discharge end of a conveyor member and over a depository means, said conveyor member used to transport said items individually to said discharge end thereof for handling by said transporting device, said transporting device comprising a frame member, a horizontal conveyor section carried upon said frame member above said depository means, handler means carried by said frame member and positioned over said depository means near said conveyor member discharge end, said frame member including guide means supporting said conveyor section for shiftable movement of said conveyor section in a generally horizontal plane between a first position wherein said conveyor section is located under said handler means and is operatively contiguous with said conveyor means discharge end to receive an item of coiled material from said conveyor member and a second position wherein said conveyor section is shifted from under said handler means and separated from said conveyor member discharge end to expose said depository means under said handler means, stop means for locating said item upon said conveyor section under said handler means as said item is received from said conveyor member by said conveyor section when said conveyor section is in its first position, said handler means for engaging said item when said item is located upon said conveyor section and being thereafter shiftable to a lower position so that said item can be lowered onto said depository means and into contact with a supporting means when said conveyor section is shifted into its second position or to an upper position so that said item is spaced above said conveyor section when said conveyor section remains in its first position.

3,861,537
DEVICE FOR COLLECTING PILES OF PRINTED MATTER INTO BUNDLES

Yakov Efimovich Duchinsky, Ibilissky pereulok 3, kv. 19, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ul. 49, korpus 2, kv. 68, Moscow; Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30; Grigory Iosifovich Zax, ul. Mechnikova, 14a, kv. 24, both of Kiev; Nikolai Ivanovich Anikanov, Bolshaya Bronnaya ul. 2/6, kv. 6, Moscow; Leonid Pavlovich Grachev, ul. Serafimovicha, 2, kv. 181, Moscow; Mikhail Evseevich Frumkin, Naberezhnaya Novikova-Priboya 9, kv. 34, and Petr Nikolaevich Mirchevsky, ul. Mechnikova 22, kv. 117, Kiev, all of U.S.S.R.

Continuation-in-part of Ser. No. 237,017, March 22, 1972, abandoned. This application Dec. 4, 1973, Ser. No. 421,644
Int. Cl. B65g *57/30*
U.S. Cl. 214—6 BA **4 Claims**



1. A device for collecting piles of printed matter into bundles, comprising, in combination: a rollerway adapted to advance piles to be collected into bundles, rollers of said rollerway mounted so that the ends thereof are free and spaces are left intermediate of said free ends of adjacent ones of said rollers; shafts mounted longitudinally of said rollerway at both sides thereof adjacent to said free ends of said rollers, said shafts being adapted for intermittent synchronous rotation in opposite directions; levers mounted radially on said shafts and arranged thereon in opposition to one another forming opposing pairs of said levers defining a bundle collecting zone, said levers having arcuately bent portions of a predetermined radius and adapted to support a pile and to lift it on synchronous rotation of said shafts; said levers of each said opposing pair having their arms of a length maximally approximating

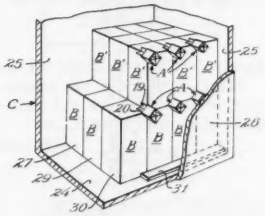
the spacing between said shafts and being offset relative to each other, so that when each pair of said opposing pairs of levers are positioned in said collecting zone said pile-supporting portions thereof come together and overlap, said levers, with said shafts being driven through said rotation, being adapted to cooperate with the piles in said collecting zone so that a pair of said arms positioned under a pile lying on said rollerway, which has been advanced into said collecting zone, passes through said spaces intermediate of the respective ones of said rollers, rise above said rollers and take the pile upon themselves, supporting the pile across the bottom plane thereof by said pile-supporting portions of said levers, while another pair of said pairs of said arms, positioned above said pile and supporting thereon the piles that have been already collected, are brought apart by further rotation of said shafts, lowering said previously collected piles onto said pile that is being lifted thereunder, whereby all said piles marry, forming a bundle; means for spreading said levers while said shafts remain stationary and providing for delivery of the collected bundle from said collecting zone in the plane in which piles are advanced into said collecting zone.

3,861,538

CAR LOADING BLOCK

Frank W. Locke, Minneapolis, Minn., assignor to Hoerner Waldorf Corp., Ramsey, Minn.

Filed Dec. 3, 1973, Ser. No. 420,894
Int. Cl. B65g 1/14
U.S. Cl. 214—10.5 R **9 Claims**



1. A car loading block for use in holding a load of similarly sized containers in spaced relation to a railroad car wall, the block including:

a square sleeve of corrugated paperboard of a length substantially equal to the distance between the containers and the car wall,

a filler including a pair of slotted panels of corrugated paperboard, the panels being slotted to intersect one another at right angles and the edges of the panels engaging diagonally opposite corners of said rectangular sleeve, at least a portion of the filler extending beyond one end of said sleeve.

3,861,539

BARGE COVER HANDLING SYSTEM

William F. Becker, Jr., Harahan, La., assignor to Becker & Associates, Inc., Harvey, La.

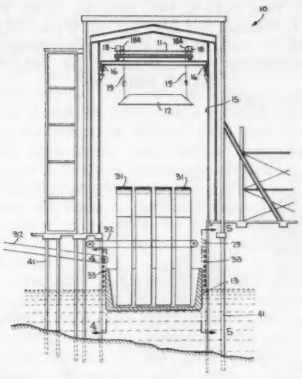
Filed June 1, 1973, Ser. No. 366,077
Int. Cl. B63b 27/00
U.S. Cl. 214—14 **5 Claims**

1. Apparatus for removing and replacing covers on a floating barge during loading or unloading operations, comprising:

a. an elongated support structure having two elevated, spaced apart horizontally disposed guide rails, said support structure having two side portions which extend vertically in parallel planes to define an open-ended corridor which straddles the path along which the barge travels and which is adapted for entry by the barge at one end of the structure and exit of the barge at the opposite end;

b. a traveling motorized crane mounted for movement along the length of said support structure on said guide rails;

c. a plurality of lift cables secured to the crane, said cables having means for connecting the cables to a cover on the barge;



d. means for raising and lowering the lift cables; and

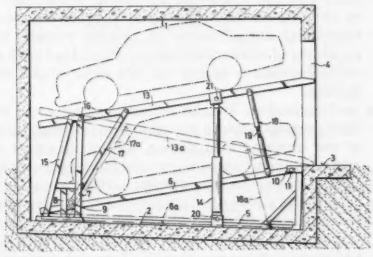
e. a horizontally-disposed storage platform located on the support structure above the level of the barge so that the barge can travel underneath it.

3,861,540

GARAGE

Ulrich Lendi, Stafa, Switzerland, and Wilhelm Seinsche, Hohentengen, Germany, assignors to Firma Mageba, Bulach, Switzerland

Filed Feb. 6, 1974, Ser. No. 440,205
Claims priority, application Germany, Feb. 15, 1973, 2307432
Int. Cl. E04h 6/06
U.S. Cl. 214—16.1 ED **8 Claims**



1. A garage with an entrance and a recessed area with a floor for parking two vehicles one above the other comprising upper and lower platforms with a respective end thereof located adjacent said entrance, said platforms being operative to support a vehicle, rigid pull rods connecting the platforms together, means enabling the end of one of the platforms adjacent the entrance to be optionally joined thereto, stationary supports for mounting the upper platform with its end remote from the entrance so as to be capable of pivotal movement about a horizontal axis, a pressure fluid operable cylinder articulated between the garage floor and the upper platform and operative to raise and lower the platforms, vertically arranged stationary rectilinear guide means for guiding movement of the lower platform and means for engaging that end

of the lower platform adjacent the entrance when the lower platform is in the upper position.

3,861,541

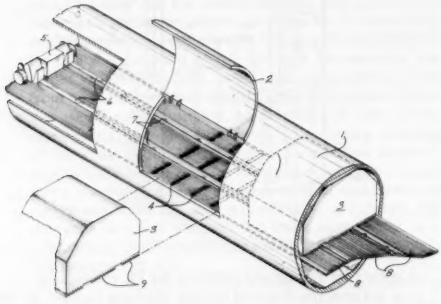
INTERMODAL UNITIZED CARGO CONTROL SYSTEM

George H. Taft, 3623 S. Lee, Spokane, Wash. 99203, and Robert L. Yelland, Box 431, Renton, Wash. 98055

Division of Ser. No. 796,052, Feb. 3, 1969, abandoned. This application Feb. 7, 1972, Ser. No. 203,000

Int. Cl. B64d *9/00*

U.S. Cl. 214—38 C **5 Claims**



1. An intermodal unitized cargo control system which restrains, handles, positions and structurally supports unitized loads for transportation in aircraft and on surface transport vehicles, comprising:

a. a unitizing load device bottom anchoring structure consisting of first anchoring means distributed substantially over its under surface and a second anchoring means distributed over the load supporting surface of its transporting vehicle substantially corresponding to the distribution of first anchoring means, the interengagement thereby effected between first and second anchoring means resulting in: truss-like augmentation of load bearing surface, increasing its allowable load; limitation of transverse and lengthwise movement of the load relative to the aircraft or vehicle load support structure; and substantial augmentation of inflight vertical restraint capability of standard industry unitized load latch mechanisms disposed to engage the side edges of said unit load devices;

b. an intermediate attachment pallet or structure substantially corresponding in dimensions to the length and width of the unitizing load device, having an upper surface essentially complementary to and interengagable with the first anchoring means on under surface of said unit load device, and a lower surface essentially complementary to and interengagable with second anchoring means on transporting vehicle's load support surface; said upper and lower surfaces separated by deep web sections having channeled openings on its four peripheral sides providing handling means for conventional tine-equipped and other ground handling machinery;

c. a compact retractable low-profile transverse mechanism device capable of moving or shifting heavy unit load devices with smooth or irregular under surfaces across aircraft or vehicle load supporting surfaces and within constricted compartments with minimum clearance between unit load and vehicle structure, and of being retracted sufficiently to permit a superimposing unit load device whose under surface incorporates first anchoring means to be anchored to a surrounding second anchoring means distributed over the aircraft or vehicle's supporting surface;

d. a powered carriage-device operating system limited to prescribed track or travel ways for moving, handling, loading, unloading and storage of unit load devices: in, on and between aircraft, trucks, rail cars, or other cargo handling and transporting vehicles; in multilevel cargo terminals, depots, storage areas, specialized connective ways, passages, tunnels, viaducts, bridges, turntables and container terminal access areas.

3,861,542

ONBOARD LIFTING DEVICE WITH ON-BOARD DRIVE FOR RETRACTING AND EXTENDING THE LIFTING DEVICE

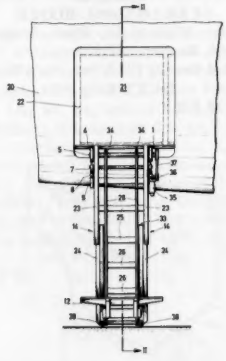
Gunther Molter; Kurt-Werner Iben, both of Ottobrunn, and Werner Zimmermann, Puchheim, all of Germany, assignors to Messerschimitt-Bolkow-Blohm GmbH, Munchen, Germany

Filed Mar. 21, 1973, Ser. No. 343,398

Claims priority, application Germany, Mar. 25, 1972, 2214746; Mar. 25, 1972, 2214747

Int. Cl. B60p *1/44*

U.S. Cl. 214—75 G **9 Claims**



1. An onboard lifting mechanism for the loading and unloading of aircraft, comprising:

frame for supporting and effecting a lifting of a load carrying platform, said frame means being pivotally fastened to said aircraft at a support point at least adjacent the lower edge of a cargo hatch;

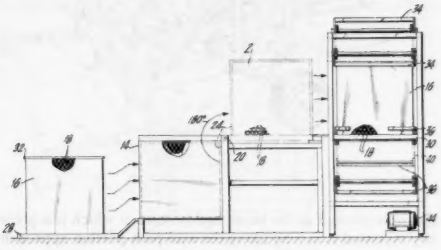
means for assisting the support of said frame means when in open operating position and for retracting same through the cargo hatch into said aircraft for storage of same;

two leg lever means pivotally supported at a point fixed with respect to said aircraft, one leg thereof on one side of said fixed point being cooperable with a source of power and the other leg of which on the other side of said fixed point being pivotally connected through a first leg of a second lever to said frame means, said second lever being pivotally fixed to said frame means at a point sufficiently spaced from said support point that lifting of said second lever will effect rotation of said frame means around said support point whereby upon activation of said power source said frame means will be pivoted around said support point and through said cargo hatch in a selected direction, said second lever including also a second leg and a connecting bar pivotally connected at one of its ends thereto, a support bar pivotally connected to a point on said frame means spaced from said support point and adapted at its other end for bearing against said aircraft and a linkage connecting the other end of said connecting bar to said support bar for pulling same toward or away from said frame means as said frame means pivots into or out of said cargo hatch.

3,861,543
BOX POSITIONING APPARATUS AND METHOD FOR USE THEREOF

Robert M. Elsworth, Loudonville, N.Y., assignor to General Electric Co., Waterford, N.Y.

Filed Jan. 21, 1974, Ser. No. 435,040
Int. Cl. B65g *59/06, 47/24, 47/52*
U.S. Cl. 214—303 **10 Claims**

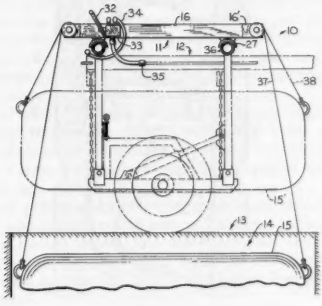


1. A box tipper including unitary top and bottom sides, unitary end sides, a unitary back side, and an open front side, and being adapted to pivot through 180° about the edge formed at the junction of the top and the back sides, said box tipper being adapted to receive at least one box open at the top and containing empty cylindrical containers disposed within the box, the axes of each such container being aligned parallel to the direction of rotation of said box tipper.

3,861,544
BELOW GROUND LIFTING APPARATUS

Marvin V. Carter, Rte. 1, Troy, Ala. 36081

Filed Apr. 13, 1973, Ser. No. 350,840
Int. Cl. B66d *3/08;* **A61g** *19/00*
U.S. Cl. 214—394 **4 Claims**



1. In combination with a straddle type cart having an overhead structure, a below ground lifting apparatus affixed to the overhead structure of the cart, said below ground lifting apparatus comprising a main frame member made of spaced elongate frame members, said frame members having opposed facing walls, a fixed sheave holder having opposed ends affixed to said spaced frame members, a first plurality of sheaves, means rotatably mounting said sheaves in journaled relationship to said fixed sheave holder;

guide means formed along a marginal longitudinal length of the opposed facing walls of said spaced frame members;

a movable sheave holder having opposed ends slidably received in low friction relationship by said guide means;

a second plurality of sheaves, means rotatably mounting said second plurality of sheaves in journaled relationship to said movable sheave holder;

means for moving said movable sheave holder longitudinally of said spaced frame members and relative to said fixed sheave holder;

a first, second, third, and fourth cable means, each said cable means having one end anchored to said lifting apparatus and the remaining end thereof depending away from said lifting apparatus for engagement with a load to be lifted; said first cable means having a marginal length thereof rove in series relationship about a group of said first and second plurality of sheaves so that when said movable member is moved a small distance, the remaining end of said first cable means is moved a proportional longer distance; said second, third, and fourth cable means, respectively, each having a marginal length thereof rove in series relationship about a second, third and fourth group, respectively, of said first and second plurality of sheaves, so that said second, third, and fourth cable means will be moved by the action of said movable member in a manner similar to the action of said first cable means;

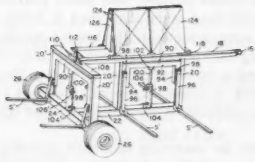
spaced cable guide means each being located adjacent to one end portion of one of said spaced frame members;

each of the recited cable means being received by one of said cable guide means so that the cable means are each depending downwardly away from said lifting apparatus in spaced relationship to one another.

3,861,545
POWER DRIVEN ARTICULATED CONTAINER TRANSPORTING DEVICE

Charles J. Ellerd, 105 Panarama Dr., Bakersfield, Calif. 93305

Division of Ser. No. 94,738, Dec. 3, 1970, Pat. No. 3,666,130, which is a continuation-in-part of Ser. No. 815,875, Dec. 29, 1970, Pat. No. 3,550,802. This application May 19, 1972, Ser. No. 254,853
Int. Cl. B60p *1/44*
U.S. Cl. 214—512 **4 Claims**



1. A container transporting vehicle that includes:

a. an elevated elongate drawbar;

b. first means on a first end of said drawbar for removably connecting said drawbar to a power operated vehicle;

c. a longitudinally extending chassis member situated a substantial distance below said drawbar and parallel thereto;

d. a first transverse crossbar connected to a rearward end of said chassis member;

e. a pair of wheels that occupy a fixed relationship to said drawbar;

f. a second transverse crossbar connected to the rearward end of said drawbar;

g. first and second pairs of vertical members that extend between said drawbar and chassis member and said first and second crossbars, respectively;

h. a plurality of first forks that extend outwardly from opposite sides of said chassis member that can removably engage said containers to support said containers thereon;

i. second means that slidably engage said first pair of vertical members, and said second means having said first pair of forks connected thereto; and

j. third means that are power operated for moving said second means and first pair of forks vertically relative to said chassis member to permit said containers to be transported in an elevated position on said vehicle.

3,861,546

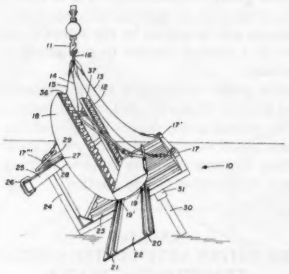
APPARATUS FOR LIFTING WALLBOARD INTO MULTITORY BUILDINGS

Thurman R. Montgomery, deceased, late of 2017 Hurstview Dr., Hurst, Tex. 176053 (by Billie Montgomery, executrix)

Filed May 3, 1973, Ser. No. 356,757

Int. Cl. B66f 9/00

U.S. Cl. 214—621 **10 Claims**



1. Apparatus for lifting an elongated load consisting of a multiplicity of sections of wallboard to a vertical opening at an elevated location and transporting the load to a desired area on the elevated location and unloading the load using a lifting cable, comprising:

a load carrying device for carrying said load, said load carrying device having a substantially "L" shaped frame with a generally vertical upright portion and a generally horizontal lower portion, said lower portion adapted to support said load when said load is being transported, wheel means connected to the lower portion of said frame for moving said apparatus when the load is being transported, and a curved member affixed to the upright portion of said "L" shaped frame extending convexly outwardly for assisting in unloading said load from said apparatus;

a body frame for receiving said load carrying device, said body frame including channels for receiving said wheel means of said load carrying device;

means for connecting said body to said lifting cable, and

ramp means projecting horizontally and extending from said body frame for extending into said vertical opening and allowing said load carrying device to move off of said body frame to said elevated location wherein said load will be transported to said desired area and unloaded.

3,861,547

CONTAINER TRANSPORTING AND MAINTAINING APPARATUS

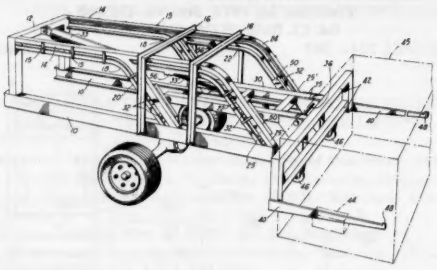
Fred N. Sink, Sr., 1133 Gillionville Rd., Albany, Ga. 31705

Filed Nov. 28, 1973, Ser. No. 419,650

Int. Cl. B65g 47/00

U.S. Cl. 214—707 **10 Claims**

1. Container transporting and maintaining apparatus adapted to be mounted to a container-handling vehicle and comprising an inclined ramp, a boom, means for reciprocally moving an end portion of said boom along a path extending adjacent said ramp and means for maintaining the boom at a substantially constant inclination during said moving with at least a portion of said path approaching said ramp, a pivotal connection, container-gripping means pivotally mounted by said pivotal connection to said boom end portion, said pivotal connection being movable generally parallel to said ramp, and support wheel means rotatably mounted to said container-gripping means to roll upon said ramp as said boom end portion is moved along said path, whereby the container-gripping



means is pivoted as the boom end portion to which it is pivotally mounted is moved along the said path portion approaching the ramp with the support wheel means contacting and subsequently rolling upon the ramp.

3,861,548

STOPPERS FOR PREVENTING THE FRAUDULENT FILLING OF CONTAINERS

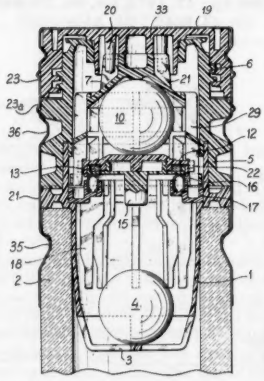
Andre Bereziat, Lyon, France, assignor to Astra Plastiquie, St. Georges De Reneins (Rhone), France

Filed Dec. 18, 1972, Ser. No. 316,390

Claims priority, application France, Oct. 25, 1972, 72.037776

Int. Cl. B65d 49/04

U.S. Cl. 215—22 **5 Claims**

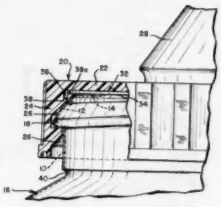


1. A stopper for preventing fraudulent filling of a container having a neck, comprising, in combination, a stopper body including a base engaged within the container neck and defining a valve seat; an internal valve engageable with said valve seat; an external closing cap threaded on the stopper body; displaceable means interposed between said cap and said valve and maintaining said valve engaged with said valve seat when said cap is threaded on said stopper body; said displaceable means being movable a limited distance outwardly in said stopper body upon unscrewing of said cap to provide for said valve to disengage said valve seat; and means, including drive means on said cap, coupling said valve to said cap for rotation of said valve, responsive to unscrewing of said cap, to disengage said valve from said valve seat in the event of said valve adhering to said valve seat due to a syrupy liquid contained in said container.

3,861,549
CONTAINER AND CLOSURE THEREFOR AND METHOD OF MANUFACTURE THEREOF

Roy Watson, Mt. Kisco, and Kenneth M. Miller, Yorktown Heights, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 2, 1973, Ser. No. 328,973
Int. Cl. B65d *41/04*
U.S. Cl. 215—232 11 Claims



1. In a closure comprising in combination a cap having a cylindrical side wall and a top wall, a heat activatable sealing gasket removably seated within said cap having the gasket face proximate the cap top wall adapted to rotate axially relative thereto and adapted to be seated and induction sealed upon a closure mouth, and a closure mouth having a flexible inwardly directed flange receiving said cap and sealing gasket and adapted to be deflected axially as the cap is screwed on the closure:

a. means mounted within the cylindrical cap side wall obstructing removal of the gasket from the cap and serving to loosely and temporarily seat the gasket within the cap as it is seated on the closure mouth preparatory to activating said gasket, said cap side wall being threadably engaged to the outer side of the closure mouth;

b. the outer free edge of said gasket being of a diameter such that it is greater than that of the obstructing means whereby said gasket is retained within said cap but also being such that it may override the obstructing means in cap removal by twisting the cap relative to the closure mouth to disengage the threaded engagement therebetween;

c. said outer free edge of the gasket projecting beyond the perimeter of the closure mouth and being sufficiently flexible to permit passage of said cap's obstructing means as it is moved axially to override said gasket upon twisting the cap;

d. said gasket in the activated state being induction-sealed to said closure mouth with an adhesion sufficient to seal the closure mouth and also to remain seated on said mouth as the obstructing means of said cap are moved axially to override the flexible outer free edge of said gasket.

3,861,550
LIQUID CONTAINER WITH PERFORATABLE LOCKING CLOSURE

John R. Taylor, Mountain Lakes; Harold F. Jones, Dover, and David L. Ousterling, Mountain Lakes, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed May 21, 1973, Ser. No. 362,596
Int. Cl. B65d *41/32*
U.S. Cl. 215—250 19 Claims

1. A container for liquid materials comprising:

a. a reservoir for containing the material;

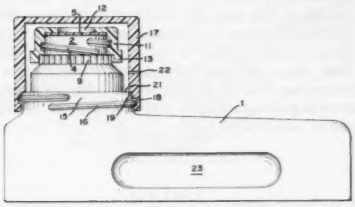
b. a cylindrical hollow neck extending from the reservoir and in communication therewith, forming the neck and mouth of the container for the charge and discharge of flowable materials;

c. said hollow cylindrical neck having a male thread on the upper portion thereof;

d. a readily perforatable plate for placement over the mouth of the container in sealed relationship therewith;

e. a multiplicity of ratchet teeth at least partially encircling the cylindrical neck below the male thread;

f. an inner screw closure, including the perforatable plate for the mouth of the container, said inner closure having a female thread for engaging the male thread on the neck of the container, said inner closure extending down over the neck of the container a sufficient distance to at least partially encompass the ratchet teeth, said inner closure



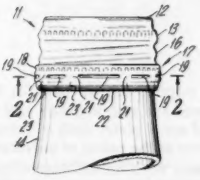
also exposing a portion of the sealed perforatable plate, said inner screw closure having additionally a multiplicity of protrusions, projecting inwardly for cooperation with the ratchet teeth, said ratchet teeth being oriented with respect to the engaging threads so that when the inner closure is screwed on, the protrusions engage the ratchet teeth to permanently retain the inner closure in sealed relationship with the mouth of the container;

g. an outer closure, sufficiently capacious as to completely enclose the inner closure, and having an annular surface for tight-fitting contact with a matching annular surface on an enlarged portion of the hollow neck below the ratchet teeth.

3,861,551
THREADED BOTTLE CAP WITH VERTICAL EXTERNAL SCORES

Charles N. Hannon, 27 Sargent Rd., Scarsdale, N.Y. 10583

Continuation-in-part of Ser. No. 117,512, Feb. 22, 1971, abandoned. This application Mar. 10, 1972, Ser. No. 233,599
Int. Cl. B65d *41/34*
U.S. Cl. 215—252 10 Claims



1. A closure for a container having a threaded section at the end of its neck and a ridge that extends outwardly from the neck below the threaded section, said closure comprising:

A. a closed end;

B. a skirt extending from the perimeter of said end and comprising:

1. a pilfer-proof section at the edge of said skirt remote from said closed end,

2. a cylindrical section between said closed end and said pilfer-proof section to engage said threaded section of said container,

3. an outwardly bulged section between said cylindrical section and said pilfer-proof section, and
4. a plurality of substantially evenly spaced slots encircling said skirt in said bulged section, said slots being defined by bridges of the material of said bulged section and by tongues of material of said bulged section pivoted inwardly, the total distance that each of said tongues extends inwardly being less than the radially outward extension of said bulged section, whereby the innermost end of said tongues do not reach said container; and

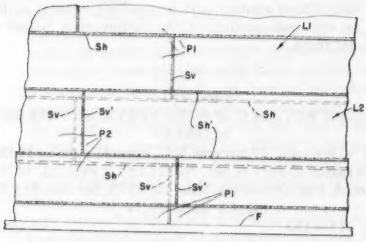
C. a plurality of scores extending from the edge of said skirt most remote from said closed end toward said closed end and inwardly from the outer surface of said skirt, and parallel to the axis, the depth of said scores being less than the thickness of said pilfer-proof section, said scores being equal in number to the number of said bridges and being angularly spaced apart by the same angle as said bridges so that all of said scores have substantially the same angular orientation with respect to a corresponding one of said bridges.

3,861,552

STORAGE TANK FOR LIQUIDS AND METHOD OF MAKING SAME

John H. Adams, Pittsburgh, Pa., assignor to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Oct. 20, 1972, Ser. No. 299,229
Int. Cl. B65d 7/48
U.S. Cl. 220—5 A **8 Claims**



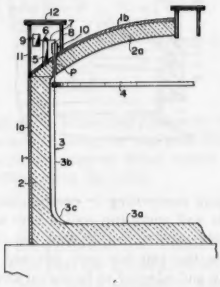
1. A tubular metallic storage tank for liquid including a cylindrical side wall and a bottom wall, said side wall comprising a plurality of metal plates each of substantially the same radius of curvature as the radius of curvature of the tank side wall and said plates welded together in edge-to-edge relationship, tank reinforcing layer means extending about the tank comprising metal plates welded together at adjacent edges and welded to, covering, and in contact with a substantial lower outer portion of the adjacent side wall of the tank, said reinforcing layer plates having a vertical width substantially the same as the vertical width of the plates in the tank side wall, the thickness of each of the plates being such that the need for stress relieving of the weld seams between adjacent plates is eliminated, all of said plates having a predetermined combined thickness to impart sufficient strength to the tank to withstand forces due to liquid stored in the tank, and the weld seams between adjacent plates in the reinforcing layer being offset from the weld seams between adjacent plates in the tank side wall.

3,861,553

MEANS FOR SUPPORTING AN INNER MEMBRANOUS VESSEL OF A LOW TEMPERATURE LIQUEFIED GAS TANK OF A MEMBRANE TYPE

Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan

Filed Nov. 15, 1972, Ser. No. 306,581
Claims priority, application Japan, Nov. 24, 1971, 46-94212
Int. Cl. B65d 7/22
U.S. Cl. 220—9 LG **9 Claims**



1. A device for supporting an inner membranous vessel of a low temperature liquefied gas tank of the membrane type including an outer vessel having a pressure-resisting structure, said outer vessel provided with a roof portion, a heat insulating layer provided at the inside of the outer vessel and the inner membranous vessel provided inside of the heat insulating layer, said inner vessel being formed as a bag having a flat bottom portion and side wall portions which are connected to said bottom portion by curved edge portions, said device for supporting the inner membranous vessel comprising an annular reinforcing member provided at an upper edge portion of said bag, a plurality of suspension means slidably passing through the roof portion of the outer vessel, and a plurality of counter-weight means, each being housed in a trunk containing a cover plate and provided at the outside of the outer vessel, each of said suspension means being connected at one end thereof with said annular reinforcing member and at the other end thereof with one of said counter-weight means.

3,861,554

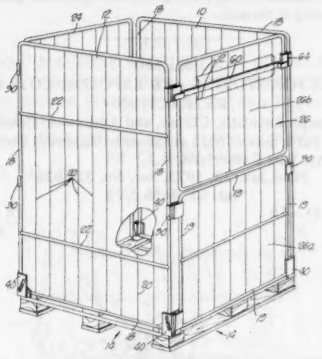
PALLET DISTRIBUTION CAGE

James R. Legg, Long Beach, and Ervin W. Miller, Huntington Beach, both of Calif., assignors to Banner Metals Division of Intercole Automation, Inc., Compton, Calif.

Filed Oct. 15, 1973, Ser. No. 406,259
Int. Cl. B65d 7/00
U.S. Cl. 220—4 R **5 Claims**

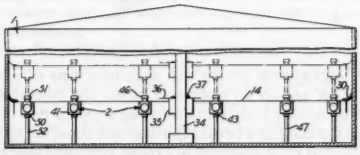
1. A cage-like structure adapted to be removably secured to the peripheral edge of a rectangular pallet, such structure including: a pair of side panels spaced and parallel to one another; a pair of end panels spaced and parallel to one another; and a plurality of locking brackets secured to respective ones of said panels at the adjacent edges thereof, each of said brackets including a first section secured to one of the panels and a second section secured to another of the panels and extending into sliding engagement with said first section, said first section and said second section of each of said locking

brackets having a wedge shape to cause the first and second sections of said brackets to tighten with respect to one another



as one of the sections is moved down with respect to the other of the sections.

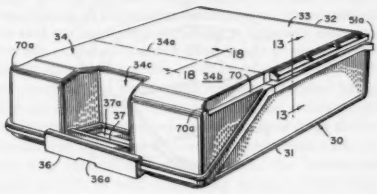
3,861,555
FLOATING COVER FOR A TANK
Ardell H. Nelson, 34 Thorn St., Sewickley, Pa. 15143
Filed Dec. 22, 1972, Ser. No. 317,371
Int. Cl. B65d *87/18*
U.S. Cl. 220—221 **10 Claims**



1. A floating cover for inside a tank, comprising a plurality of laterally spaced horizontal tubular pontoons, a plurality of spaced parallel support bars extending across the tops of the pontoons and supported thereby, metal sheets covering the spaces between the bars and having edge portions resting on the bars, said sheets being spaced above the pontoons and extending across them, clamping bars engaging the upper surfaces of said edge portions of the sheets, vertical fasteners extending through the clamping and support bars for holding them tightly together to clamp the edge portions of the sheets between them to form a deck above the pontoons, and sealing means extending around said deck for sliding engagement with the side wall of a tank.

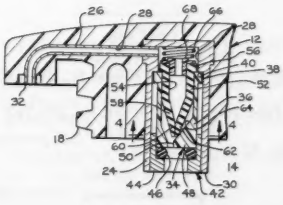
3,861,556
TOTE BOX
Chester J. Barecki, Grand Rapids, and Donald Waleson, Wyoming, both of Mich., assignors to American Seating Company, Grand Rapids, Mich.
Filed Mar. 8, 1972, Ser. No. 232,715
Int. Cl. A45c *13/26, 13/28*
U.S. Cl. 206—216 **12 Claims**

1. A tote box for transporting and storing books and the like comprising: an integral body having a top, a bottom, forming a handle adjacent the center forward portion thereof, and four upright side walls, a major portion of one of said upright walls above said handle being integrally formed with a portion of said top to form a lid, including a hand recess area in the upright side wall thereof and a transverse latch support bar extending across said recess to provide a finger recess, said latch support bar being positioned adjacent the closing edge of said lid and alignable with said handle formed in the bottom of said tote box when said lid is placed in a closed position, whereby a person grasping said handle of said box when said lid is in a closed position will also grasp said latch support bar and thereby hold said lid in a closed position during transportation; hinge means joining said lid to the remainder of said top along a hinge line, whereby access to said box may be gained by opening said lid about said hinge means to thereby



open one of said walls and at least a portion of said top; sliding support channel means formed integrally with opposing upright side walls of said tote box and extending rearwardly only from said hinge line for forming an elongated channel on either side of said box parallel to the bottom and adapted to receive stationary slide supports for supporting said box in partially extended position, whereby said box may be partially removed from its associated slide supports and said lid may be selectively raised to an open position while the box is held by said slide supports.

3,861,557
VENT CAP
Willis E. Tupper, Dexter, Mich., assignor to Dexter Automatic Products, Co., Inc., Dexter, Mich.
Filed Aug. 6, 1973, Ser. No. 385,875
Int. Cl. B65d *51/16*
U.S. Cl. 220—373 **8 Claims**



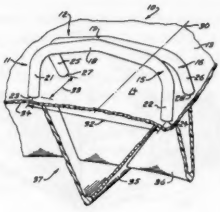
1. A vent cap for a fuel container comprising a plastic molded body defining a central portion for securing the cap to a neck of the fuel container and an integral radially outer hand-grip portion, and vent apparatus molded in said body, said vent apparatus including a passageway extending from the base of said central portion for communication with the interior of the fuel container to a lower surface of the hand-grip portion for communication with the atmosphere, said vent passageway being defined by a metallic casing in said central portion having an open lower end for communication with the interior of the fuel container and a metallic tube extending radially from said casing and terminating in the hand-grip portion in a downwardly directed open end for communication with the atmosphere, and a check relief valve element mounted in said casing in said passageway.

3,861,558

CONTAINER COVER ASSEMBLY

Donald Paul Hings, Burnaby, B. C., Canada, assignor to Blythe T. Rogers, Vancouver, British Columbia, Canada; William R. Page and Robert F. Russell, both of Chicago, Ill., part interest to each

Filed Oct. 23, 1973, Ser. No. 408,657
Int. Cl. B65d *51/00*
U.S. Cl. 220—200 **10 Claims**



1. A container cover assembly having a lightweight plastic cover member and a lifting lug in which:

a. the lifting lug includes a tube having a longitudinal bore extending along length of the tube, the tube being generally U-shaped and having two spaced ends, the lug being adapted to be engaged by a lifting device,

b. the cover member has a first pair of openings spaced apart at a distance equal to spacing between the ends of the lug so that when the ends of the lug are fitted to the member the bores in the ends of the tube are in register with the openings of the member,

c. a plurality of reinforcing fibres having lengths longer than the length of the tube extend through the bore of the tube and through respective openings of the cover member, with ends of the fibres spaced from the ends of the tube, the fibres fanning outwards adjacent a surface of the member remote from the lug, the fibres being bonded together and to the member with a settable synthetic resin,

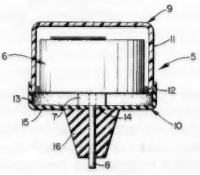
so that load on the lug is transferred to the fibres and is diffused gradually into the member so as to reduce stress concentration, and the tube protects the fibres from the lifting device.

3,861,559

INSTRUMENT CASING

John Paradis McCormick, 521 Hilmar St., Santa Clara, Calif. 95050

Filed July 11, 1973, Ser. No. 378,192
Int. Cl. B65d *25/54*
U.S. Cl. 220—82 A **2 Claims**



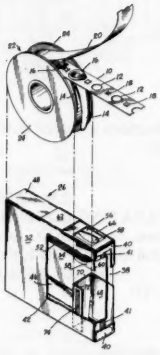
1. A casing for an instrument, such as a vacuum gauge, comprising a transparent cup-shaped member disposed over and providing a lens for the gauge, a second cup-shaped member disposed behind the gauge and having an annular wall overlapping and sealed to the annular wall of the lens, said members being formed of impervious materials to provide a hermetically sealed enclosure for the gauge, said second member being formed of a thin walled elastic material to provide a diaphragm capable of collapsing or being distended to compensate for pressure variations caused by ambient temperatures, and means for supporting the casing on the gauge and for anchoring it thereto.

3,861,560

DEVICE FOR STORING AND EXPOSING COTS FOR EXTRACTION

Claude Joseph Entwistle, Clifton, and Andrew A. Oakes, Harrington Park, both of N.J., assignors to Dickinson Becton and Company, East Rutherford, N.J.

Filed Jan. 23, 1973, Ser. No. 326,026
Int. Cl. B65h *5/28*
U.S. Cl. 221—70 **18 Claims**



1. A package for storing and dispensing cots of the type adapted for use on an associated probe and comprising an elongated tubular body portion having a closed bottom end, an open top end and a beaded rim disposed about the open top end, said cots being provided in a rolled elongated tape having spaced perforations in which the individual cots are suspended, said package including a dispensing container formed from a unitary carton blank and adapted to receive the rolled tape, said unitary carton blank, comprising:

a body portion including first and second side wall panels adapted to be spaced opposite one another and first and second end panels adapted to be spaced from one another, the first end panel being connected to both side wall panels by score lines and the second end panel being connected to the second side wall panel;

a connecting panel connected to the first side wall panel by a score line and adapted to be contiguous with the second end panel and bonded thereto;

a bottom closure assembly means for closing the bottom of the dispensing container when erected;

a top closure assembly means for closing the top of the dispensing container when erected, said closure assembly means having an access opening formed therein at a position adjacent one end panel, said access opening being dimensioned to expose only one cot at a time for extraction by a probe from said package;

a tape support assembly including means for permitting the removal of only one cot at a time through said access opening, said just mentioned means comprising: a bifurcated portion portion attached to the one end panel and adapted to be folded under the top closure assembly means so that the access opening is superimposed over the bifurcated portion, support means attached to the bifurcated portion for supporting the bifurcated portion beneath the top closure assembly, so that an unrolled portion of the tape may be passed over the tape support

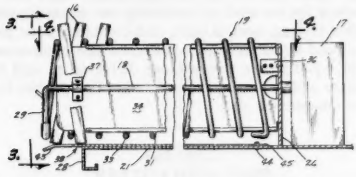
assembly and beneath the top closure assembly until a cot is engaged by the bifurcated portion and held in position for removal through the access opening.

3,861,561

VENDING MACHINE RAISED HELIX DISCHARGE UNIT

Francis A. Wittern, Des Moines, and Arthur N. Wirstlin, Altoona, both of Iowa, assignors to Fawn Engineering, Des Moines, Iowa

Filed Apr. 30, 1973, Ser. No. 355,887
Int. Cl. G07f *11/46*
U.S. Cl. 221—75 **3 Claims**



1. In a vending machine having an accessible cabinet and within one portion of which is an item discharge chute for dispensing items to be withdrawn from the machine, a plurality of item discharge units mounted in a side-by-side horizontally disposed arrangement, each item discharge unit comprising:

tray means having laterally spaced side walls, a rear wall, and a base, said tray means open to the discharge chute at the front end thereof;

helical means having a plurality of convolutions disposed between said side walls and extended the length of said tray means;

means for rotating the helical means; and

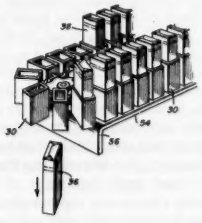
means secured to said tray means and supporting said helical means above and out of engagement with said tray means base, said secured means extending under and engaging a plurality of said convolutions on the bottom side of the top portion of said convolutions said secured means including a vertically disposed member extending longitudinally of said helical means and intermediate said side walls so as to divide said tray means and said helical means such that items to be vended are placeable on either side of said vertical member between adjacent convolutions.

3,861,562

UNIVERSAL VENDING MEANS FOR PACKAGED MATERIALS IN A VENDING DEVICE

Charles R. Owen, 8101 Evergreen, Little Rock, Ark. 72207

Filed May 7, 1973, Ser. No. 357,705
Int. Cl. G07f *11/58*
U.S. Cl. 221—85 **2 Claims**



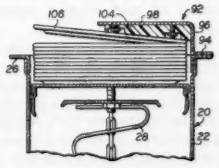
1. In a vending machine a customer access area, and visibly enclosing articles or merchandise packages for selection by the customer, a dispensing module including an elongated shelf having a generally horizontally arranged planar, smooth supporting surface, said surface having an omitted area at an end of said shelf adjacent said customer access area, motor driven conveying means including an endless flexible chain trained around a pair of end sprocket gears mounted for rotation above and parallel to said supporting surface, said flexible chain including a plurality of links with said links including vertically spaced lateral support pins thereon, vertically disposed carrier means rigid with said pins, said conveying means being oriented parallel to and above said supporting surface and further including a plurality of said carrier means for movement in a circuitous path over the supporting surface, each said carrier means including a vertically elongated, peripherally continuous sleeve-like, article or package retaining member mounted on the exterior of said endless flexible chain, each article or package retaining member being open at the top and at the bottom to enable an article or package to be inserted from the top and discharged from the bottom, as the conveying means is moved in a circuitous path over said supporting surface and omitted area, the horizontally arranged portion of said supporting surface cooperating with said sleeve-like member and being disposed closely adjacent thereto to close the bottoms of said sleeve-like members while said conveying means is moving over said horizontally arranged portion of said supporting surface, movement of said conveying means normally being in single article dispensing increments, said omitted area of the supporting surface being greater in extent than the cross-sectional area of the retaining member to prevent shear of the article by the edges of the omitted area and to eliminate the necessity of accurate alignment of the retaining members with the omitted area, said supporting surface and omitted area being symmetrical about a longitudinal axis of the supporting surface passing through the axes of rotation of the sprocket gears thereby enabling the sprocket gears and endless chain to be driven in either direction with equal discharging capability, said omitted area being completely free of obstructions to permit free fall of articles and symmetrical about said longitudinal axis at only one end portion of the supporting surface, and said omitted area is defined by a transverse, depending, perpendicular flange adjacent said customer access area at one end of the supporting surface which flange further constitutes a handle means to assist in interchanging modules, said omitted area being continuous between the side edges of the supporting surface.

3,861,563

SELF-LEVELING DISPENSER WITH ARTICLE SEPARATOR

Arthur Lisbin, Upper Saddle River; George Tanney, Wayne Township, Passaic County, both of N.J., and James Albanese, Forest Hills, N.Y., assignors to Levelator Corporation, Paterson, N.J.

Filed Apr. 12, 1973, Ser. No. 350,501
Int. Cl. A47f *1/06*
U.S. Cl. 221—279 **3 Claims**



1. A dispensing device comprising container means containing a column of rigid articles to be dispensed, said container means having an opening through which said rigid articles are dispensed, biasing means urging said column in one longitudinal direction towards said opening, stop means mounted in a

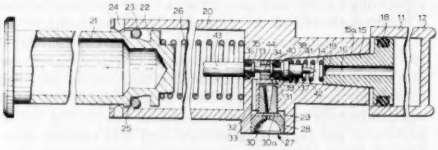
fixed position relative to said opening and disposed in a position to engage one longitudinal end of said column, said stop means including a section extending over said opening of said container means and having a length greater than at least one-half the radius of said opening in said container means, said section of said stop means including a straight line portion disposed at an acute angle relative to the longitudinal axis of said column, said stop means including a cover having a first and a second cover element, means pivotally mounting said first cover element on said second cover element such that said first cover element is rotatable between a closed position and an open position, said biasing means urging said column in said one longitudinal direction so that the end article at said one longitudinal end of said column engages said section of said stop means, whereby when said end article is withdrawn upon being dispensed, said biasing means moves said column in said one longitudinal direction to cause the next succeeding article in the stacked column to engage said section of said stop means and to tilt said next succeeding article at an acute angle relative to the longitudinal axis of said column to thereby facilitate dispensing of said article.

3,861,564

PRODUCT PRESSURIZING DISPENSER INCLUDING PRODUCT FLOW CUTOFF

Herbert H. Loeffler, Arlington, Mass., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 31, 1973, Ser. No. 411,266
Int. Cl. B65d *83/14*
U.S. Cl. 222—80 **9 Claims**



1. A device for dispensing liquid product in fine droplet form in compressed air, comprising:

a dispenser body having a bore therethrough;

a product pressurizing piston cylinder means on one end of said dispenser body and having a fixed member and a movable member movable relative to the fixed member for pressurizing liquid product in said product pressurizing means, and having a product passageway therethrough opening into said bore;

air compressing piston cylinder means on the other end of said dispenser body having a fixed member and a movable member movable relative to said fixed member through a compression stroke for compressing air within said air compressing piston cylinder means and supplying it to said bore, said movable member of said air compressing piston cylinder means being movable in opposition to the movable member of said product pressurizing piston cylinder means;

a dispensing nozzle means on said dispenser body having a compressed air passage and a liquid passage therethrough for co-mingling the compressed air and liquid and dispensing the liquid product in fine droplet form in the compressed air, said dispenser body having a liquid passage opening out of one end of said bore and extending to said dispensing nozzle means and said dispenser body having a compressed air passage opening out of the other end of said bore and extending to said dispensing nozzle means;

gas valve means in said bore normally obturating said compressed air passage and movable to open said compressed air passage, and liquid valve means in said bore normally obturating said liquid passage and movable to open said liquid passage, and a valve moving stem reciprocably movable in said bore engaging both said valve means; and actuating pin means operatively associated with said movable member of said air compressing piston cylinder means and said valve moving stem for positively actuating said stem and hence said valve means near the end of the compression stroke only when said air compressing piston cylinder means has compressed air to a predetermined pressure;

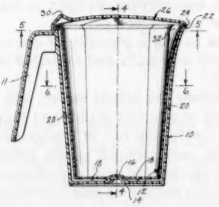
whereby when liquid is present in said product pressurizing piston cylinder means and pressure is exerted on said product pressurizing piston cylinder means and said air compressing piston cylinder means to force the movable members thereof toward each other, pressure exerted on the liquid and the air pressurizes the liquid and compresses the air until the actuating pin means moves said valve moving stem to open said compressed air passage and said liquid passage, whereupon said compressed air and liquid under pressure are delivered to said nozzle means and the liquid is dispensed in fine droplet form in the compressed air.

3,861,565

INSULATED PITCHER

Carl H. Rickmeier, Jr., Sheboygan, Wis., assignor to B.H.C., Inc., Sheboygan, Wis.

Continuation of Ser. No. 217,914, Jan. 14, 1972, abandoned.
This application Sept. 5, 1973, Ser. No. 394,961
Int. Cl. A47g *19/12*
U.S. Cl. 222—131 **4 Claims**



1. An insulated pitcher comprising

a. a hollow outer body member having an open top and a substantially flat bottom,

b. a hollow inner body member which is shaped and dimensioned to fit within said outer body member in spaced relation thereto,

the space between said inner and outer body members constituting an air insulating chamber for retarding the flow of heat between said inner and outer body members,

c. cover means for closing the uppermost end of said inner and outer body members,

d. an upwardly extending bulge formed in the central portion of the bottom of said hollow outer body member,

e. an upwardly extending bulge formed in the central portion of the bottom of said hollow inner body member,

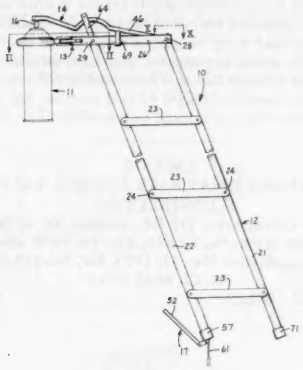
f. the upwardly extending bulges set forth in (d) and (e) being in essentially vertically aligned supporting relationship and having the same radius of curvature, but the bulge of the inner body member subtending a smaller arc length so as to provide the air space set forth above,

g. said outer body member being flanged at its upper most end, and wherein said inner body member being flanged at its uppermost end, and wherein the flange of the inner body member rests upon the flange of the outer body member, thereby closing the top margin of said air insulating chamber between said inner and outer body members,

h. said cover being shaped to slideably engage over and partially around the flanges in said inner and outer body members so that said cover will slide in a plane perpen-

dicular to the height axis of said inner and outer body members.

3,861,566
REMOTE SPRAY DEVICE
James G. Wentzell, Rt. No. 2, Fennville, Mich. 49408
Filed Jan. 29, 1973, Ser. No. 327,588
Int. Cl. A62c *31/24*
U.S. Cl. 222—174 **7 Claims**



1. An extension device for remotely supporting and actuating a conventional aerosol container having a movable valve control element, comprising:

an elongated rodlike frame member;

an elongated rodlike control member laterally spaced from and substantially parallel with said frame member;

support means extending between and pivotally connected to said frame member and said control member, said support means including a support member extending between and pivotally connected to said frame member and said control member adjacent one end thereof, respectively;

an intermediate link member positioned substantially parallel to and laterally spaced from said support member, said link member extending between and having the opposite ends thereof pivotally connected to said frame member and said control member;

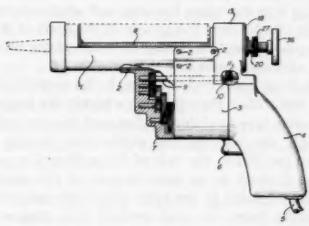
holding means mounted on said support means for holding a conventional aerosol container;

actuating means movably supported on said one end of said frame member and disposed adjacent said support means for permitting actuation of said valve control element for permitting actuation of same; and

triggering means disposed adjacent the other end of said frame member and operatively interconnected to said actuating means for permitting selective actuation thereof, said triggering means including a manually movable trigger member movably supported on said frame member adjacent said other end thereof.

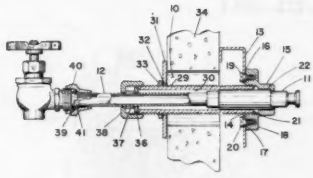
3,861,567
HAND-HELD ELECTRIC CAULKING GUN
George B. Davis, Jr., 7512 Marbury Rd., Bethesda, Md.
Filed Mar. 13, 1974, Ser. No. 450,877
Int. Cl. B67d *5/46*
U.S. Cl. 222—333 **19 Claims**

1. A hand-held caulking gun including in combination a receptacle for receiving a caulking cartridge having a caulking dispensing nozzle thereon, a threaded piston movable when driven through said cartridge to force the caulking within said cartridge from said nozzle, drive means for said piston including a threaded nut disposed about said piston and operative when rotated to drive said piston through said cartridge, a power source, a speed reducing drive train connecting said power source with said nut and operative when actuated by said power source to effect rotation of said nut, fixed means



engaging said piston and operative upon rotation of said nut by said power source to prevent rotation of said piston with said nut, and clutch means interposed in said speed reducing drive train between said power source and said nut, and operative to interrupt rotation of said nut upon a predetermined arrested movement of said piston.

3,861,568
LIQUID SOAP DISPENSING SYSTEM FOR PENAL INSTITUTIONS AND THE LIKE
Earl L. Morris, and Theodore J. Sally, both of Whittier, Calif., assignors to Acorn Engineering Co., Industry, Calif.
Filed Dec. 11, 1972, Ser. No. 314,257
Int. Cl. B67d *5/40*
U.S. Cl. 222—383 **6 Claims**



1. A liquid soap dispensing system for lavatories and the like, comprising:

a. a soap valve having a plunger therein;

b. a valve housing;

c. a pipe adapted to receive and support the valve housing therein;

d. a wall having a perforation therethrough sufficiently large to receive the pipe and isolating the lavatory area from the pipe chase area;

e. means for connecting the valve housing end adjacent to the soap dispensing end, to the pipe end, and for anchoring said valve housing end to the side of the wall exposed to the lavatory area, wherein said anchoring and connecting means cannot be removed or disassembled from the lavatory area;

f. means for anchoring the pipe to the wall;

g. means for connecting the opposite end of the pipe to the housing to prevent any substantial movement therebetween;

h. a source of liquid soap;

i. means for connecting the liquid soap source to the valve housing within the pipe chase area; and

j. means to prevent rotation of the soap valve dispensing outlet after assembly of the soap dispensing system, comprising:

a groove in the body of the soap valve plunger substantially parallel to the longitudinal axis of the plunger;

a threaded hole through the wall of the valve housing inaccessible to the lavatory area;

a screw adapted to be threadably mated to the threaded hole in the wall of the valve housing and being of sufficient length to project beyond the wall of the valve housing into the valve housing, and whose diameter is slightly smaller than the groove in the body of the soap valve plunger so that it may be received thereinto and to be slideably moveable thereinwith;

an escutcheon anchored to the wall, the escutcheon having a perforation therethrough wherein the body of the soap valve may be slideably disposed therein and therethrough, the wall of the perforation having a slot therein parallel to the axis of the perforation; and

a tongue formed as an integral part of the soap valve housing adjacent to the soap valve end and projecting outwardly from the end thereof, said tongue being adapted to be slideably mated with the slot.

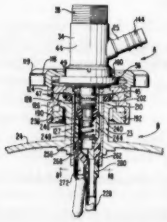
3,861,569
BEER TAP

Mack S. Johnston, Rolling Hills, Calif., assignor to Draft Systems, Inc., Northridge, Calif.

Continuation of Ser. No. 38,733, May 19, 1970, which is a division of Ser. No. 814,883, March 26, 1969, which is a continuation of Ser. No. 676,291, Oct. 18, 1967, which is a continuation-in-part of Ser. No. 611,610, Jan. 25, 1969, Pat. No. 3,410,458, which is a continuation-in-part of Ser. No. 587,627, Oct. 18, 1966, Pat. No. 3,422,448, which is a continuation of Ser. No. 406,682, Oct. 27, 1964, abandoned, which is a continuation-in-part of Ser. Nos. 395,084, Sept. 8, 1964, Pat. No. 3,231,154, and Ser. No. 150,982, Nov. 8, 1961, abandoned, said Ser. No. 395,084, is a continuation of Ser. No. 150,982,. This application Nov. 3, 1972, Ser. No. 303,419

Int. Cl. B65d *83/00*

U.S. Cl. 222—400.7 **12 Claims**



1. A liquid dispensing apparatus for use with a keg or like container for liquid which has top, bottom and side walls with a cylindrical opening in one wall of said keg characterized in that it comprises:

a keg adapter for normally sealing the keg opening and having a body including gas and liquid passageways therethrough for the respective transfer of gas from the outside to the inside of the keg and the transfer of liquid from the inside to the outside of the keg,

said keg adapter body having a lateral extent along its length less than the diameter of the cylindrical keg opening whereby said keg adapter body is receivable directly into the keg opening from outside of the keg, a normally closed liquid valve in said liquid passageway, a check valve in said gas passageway for permitting flow of gas into the keg and precluding flow of liquid and gas from the keg through said gas passageway, said gas valve including an elongated tube-like member having side wall portions and an end wall portion and formed of flexible material, the end portion of said tube-like member opposite said end wall portion being open for receiving gas flowing in said gas passageway thereby permitting gas flow within said tube-like member, means for securing said open end portion of said member to said keg adapter body in sealing relation about said gas passageway with said member projecting inwardly from said open end portion toward the keg, a slit in one of said wall portions, said gas valve being configured such that said slit opens to permit ingress of gas into the keg when the gas pressure in said gas passageway exceeds the gas pressure in the keg and closes to form a seal when the gas pressure in said gas passageway is lower than the gas pressure in the keg, said member being substantially D-shaped in cross section in a plane generally normal to the long axis of said tube-like member and lying in spaced side-by-side relation with portions of said keg adapter, said latter adapter portions and said member having a combined lateral extent at any location along the length of said member less than the diameter of the cylindrical keg opening.

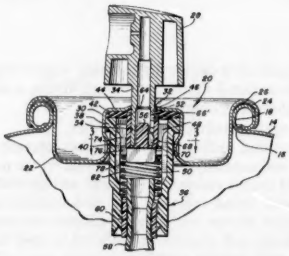
3,861,570
VARIABLE SPRAY RATE AEROSOL VALVE CONSTRUCTION

Edward H. Green, Army Trl. Rd., Addison, Ill. 60101

Continuation of Ser. No. 62,587, Aug. 10, 1970, abandoned. This application May 11, 1973, Ser. No. 359,230

Int. Cl. B65d *83/14*

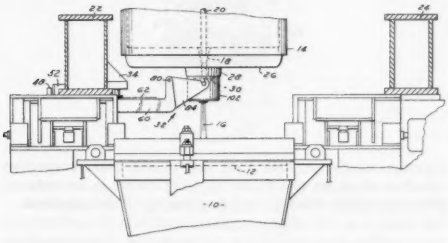
U.S. Cl. 222—402.17 **8 Claims**



1. An aerosol valve and removable sprayhead structure in which the valve structure includes a valve housing with a dip tube adapted to bring pressurized product to the interior of said housing, a spring pressed valve plunger reciprocable in said housing, means forming a socket in the plunger opening to the top thereof and an annular valve seat about the said top of the socket, a resilient gasket secured in said cover member with said housing and having a central passageway, a central opening in the cover member, said socket, opening and passageway being coaxially aligned, the removable sprayhead includes a depending hollow stem having an axial slot in a wall thereof opening to the bottom end of said stem and the said stem extending through the passageway and central opening in a sealed but rotative and slidable engagement and having the said bottom end seated in said socket with the top end of the slot opening out of the socket, and in which there is a slot and key connection between said housing and plunger permitting reciprocation of the plunger within the housing while preventing rotation of the plunger relative to the housing wherein said stem can be rotated to different positions relative to said valve plunger to provide different spray rates at each position; and means to facilitate assembly of the plunger and housing during manufacture of said valve structure and including a plurality of more than two axially aligned elongated teeth, the lower ends of which are tapered to chisel-like points, said teeth equally circumferentially spaced completely around one of the exterior of the plunger and interior of the housing, providing a plurality of grooves between adjacent pairs of teeth and at least a pair of diametrically opposite, axially aligned, circumferentially spaced ribs on the other of

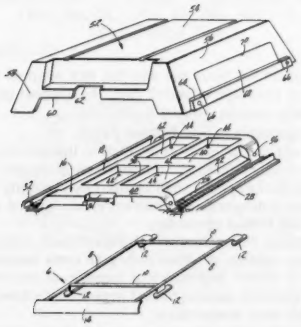
said exterior of the plunger and interior of the housing, the ribs being axially aligned such that they will mate with said grooves, the upper ends of the ribs are slanted and form radially aligned edges, the number of ribs being less than the number of teeth whereby there will be a plurality of unoccupied spaces between pairs of teeth after assembly, the lower ends of the teeth and the upper slanted ends of the ribs providing piloting means for alignment of the plunger and housing when the plunger is moved into the housing.

3,861,571
LADLE FLOW CONTROL SAFETY DEVICE FOR CONTINUOUS CASTING MACHINE
Arch V. Franklin, 2427 Dickenson, Trenton, Mich. 48183
Filed June 19, 1972, Ser. No. 264,228
Int. Cl. B22d *37/00*
U.S. Cl. 222—533 **12 Claims**



1. A molten metal flow control safety device for use with a continuous casting machine supplied from a bottom tap ladle; comprising support means positioned adjacent the ladle bottom, linear extension means mounted on and movable on the support means to extend under the ladle upon actuation, means accommodating lateral positioning of said extension means, flow control means mounted on said extension means, and means providing vertical positioning of said flow control means adapted upon actuation to engage said flow control means with the ladle bottom about the bottom tap.

3,861,572
CARRIER MOUNTABLE ON THE ROOF RACK OF A CAR
Paul R. Norris, Stone Mountain; Frank Van Haltern, Jr., Atlanta, and David K. Walz, Stone Mountain, all of Ga., assignors to Olin Corporation, New Haven, Conn.
Filed June 7, 1973, Ser. No. 367,909
Int. Cl. A45f *1/16*
U.S. Cl. 224—42.1 E **5 Claims**



1. A support device which is securable to an auto roof rack of the type having laterally offset bars secured to the auto roof and extending longitudinally thereof, said device comprising:

a. a substantially horizontally extending base formed from sheet-like material, said base including complementary laterally offset and longitudinally extending downwardly open side channels positioned to overlie and receive the roof rack bars so that a lower surface of the base extends below the roof rack bars;

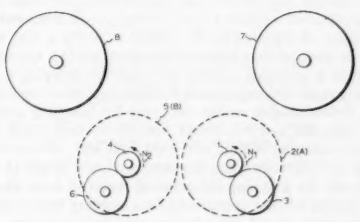
b. a plurality of laterally open gripping means mounted within said base for lateral movement toward and away from the roof rack bars, said gripping means being operable to be moved into a locking position in engagement with the roof rack bars and a release position laterally offset from the roof rack bars;

c. an actuating rod movably mounted within said base for reciprocation in a first direction and return in the opposite direction;

d. link means operably interconnecting said actuating rod and said gripping means to cause said gripping means to be moved to said locking position when said actuating rod is moved in said first direction, and to further cause said gripping means to be moved to said release position when said actuating rod is moved in said opposite direction; and

e. at least one upwardly facing article-receiving means formed in said base.

3,861,573
TAPE TRANSPORT SYSTEM
Itaru Kawasaki; Kazutsugu Kobayashi, and Yasuo Yamataka, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed July 18, 1973, Ser. No. 380,333
Claims priority, application Japan, July 20, 1972, 47-73166; July 20, 1972, 47-73167
Int. Cl. B65h *25/22*
U.S. Cl. 226—25 **6 Claims**



1. A tape transport system comprising:

a supply reel;

a take-up reel;

an upstream capstan;

a downstream capstan;

said capstans being positioned for guiding a tape from said supply reel to said take-up reel via said upstream capstan and said downstream capstan, and the rotational directions of both said upstream and downstream capstans coinciding with the running direction of said tape from said supply reel to said take-up reel;

an upstream motor coaxial with and driving said upstream capstan at a peripheral speed which decreases at a rate with an increase in the load torque therein; and

a downstream motor coaxial with and driving said downstream capstan independently of said upstream capstan and at a peripheral speed greater than the peripheral speed of said upstream capstan, and which peripheral speed decreases with an increase of load torque at nearly the same rate as said upstream capstan, whereby said tape, is transported substantially without slippage between said tape and said upstream and downstream capstans against the action of tension in said tape.

3,861,574

APPARATUS FOR THE PRODUCTION AND/OR TESTING OF WELDED HELICAL SEAM PIPE

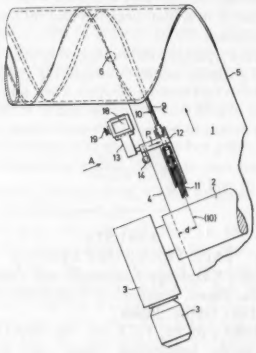
Ralf Hoffmann, Im Hilger 12, Dortmund-Solde, and Werner Wennemann, Wildbannweg 51, Dortmund-Kirchhorde, both of Germany

Division of Ser. No. 341,281, March 14, 1973. This application Feb. 28, 1974, Ser. No. 446,761

Claims priority, application Germany, Mar. 15, 1972, 2212382

Int. Cl. B23k *31/02*

U.S. Cl. 228—9 5 Claims



1. In an arrangement of producing welded helical seam pipe from steel sheet wound into pipe formation, and including means for applying an opticaly scannable reference line to said sheet so as to extend parallel to one of the edges of the sheet on that face of the sheet which forms the inner surface of the pipe and wherein a first welding head is arranged within the space of the pipe to be welded to apply a first welding seam to the opposing edges of the sheet, while a second welding head is arranged outside said pipe for applying a second welding seam, the improvement which comprises optical scanning means located within said pipe for scanning said reference line and control means operatively connected to said optical scanning means and said first and second welding heads for controlling the movement of said heads in dependence on the scanning information received from said scanning means further comprising tack-welding means for tack-welding said wound sheet before said welding seams are applied.

3,861,575

APPARATUS FOR THERMAL RELAY WELDING

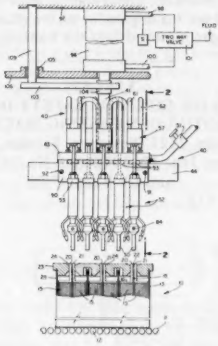
William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Division of Ser. No. 184,338, Sept. 28, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,528

Int. Cl. B23k *3/02*

U.S. Cl. 228—51 2 Claims

1. Apparatus for thermal welding a plurality of members together comprising an element adapted to be heated and directly applied to members to be welded together, means for heating the element, both said element and said heating means therefor comprising components of the same apparatus, attached to one another and movable together, wherein said heating means comprises means for applying an open flame to said element, and wherein there are a plurality of said elements, each with an associated flame-applying means, wherein a mounting base is provided in said apparatus, with said respective attached element and flame applying means each being adjustably carried together on said base, and with a guide plate carried by said base and having a set of voids therein for at least partially receiving portions of said flame applying means therein for guiding and positioning each of said respective attached elements and flame applying means



together relative to said base and to the other respective attached elements and flame applying means in accordance with a predetermined desired positioning of said elements.

3,861,576

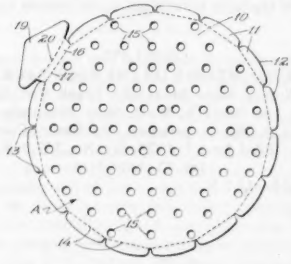
HEATABLE PIZZA PIE SUPPORT

William M. Tolaas, St. Paul, and Edwin C. McLaren, Minneapolis, both of Minn., assignors to Hoerner Waldorf Corporation, Ramsey County, Minn.

Filed Jan. 11, 1973, Ser. No. 322,794

Int. Cl. B65d *5/20*

U.S. Cl. 229—3.5 R 2 Claims



1. A support for pizza pie and the like adapted to be enclosed in an envelope of shrink film, the support including:

a generally circular bottom panel,

spaced apertures in said bottom panel,

a series of flaps hingedly connected to the periphery of said bottom panel about the circumference thereof,

said flaps being spaced slightly apart by generally V-shaped notches a distance sufficient to remain spaced when said flaps are folded upwardly,

said support being formed of paperboard coated with a coating capable of withstanding an oven temperature of 400° to 500°F and which is capable of preventing the pizza pie from sticking to said paperboard when subjected to such oven temperature,

whereby when the pizza pie is enclosed in an envelope of shrink film, the shrinking of said film will fold said flaps upwardly about the edges of the pizza pie, and

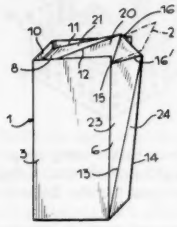
whereby when said shrink film is removed, said support bearing said pizza pie may be placed in an oven and said spaced apertures will permit circulation of heat through said pizza pie.

3,861,577

PACKAGE FOR LIQUID OR SOLID MATERIALS

Romain Druyts, Duffel, Belgium, assignor to Quepar S.A., Fribourg, Switzerland

Filed July 27, 1972, Ser. No. 275,641
Claims priority, application Belgium, Aug. 3, 1971, 63655
Int. Cl. B65d *5/70, 5/54, 17/20*
U.S. Cl. 229—7 R **2 Claims**



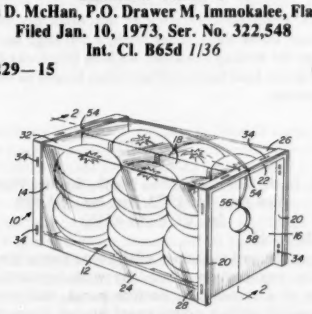
1. A pack for containing liquid or solid filling materials, comprising a flexible bag impervious to the filling material and accommodated, with its upper end folded over, within a supporting covering of parallelepipedal form which is flexible but sufficiently rigid to support the bag and formed of side walls, a base and a top, the top and one of the side walls each having two angular folding lines, the top being made in one piece and having an outwardly directed peripheral rim for attachment to the adjacent exterior portions of the side walls of the covering so as to act as a reinforcement for the upper edges of the side walls and a portion of the rim and the adjacent wall to which this portion is attached each having mutually facing lines of weakness defining a tear-off strip between which the extremity of a folded tab of the bag is gripped, the arrangement being such that said tab can be worn away simulteneously with the tearing away of the strip formed by the lines of weakness to obtain an opening in the covering at the junction of the top and said one side wall and a double pouring spout can then be formed by urging the other two opposite side walls toward each other.

3,861,578

TOMATO CARTON

Thaddeus D. McHan, P.O. Drawer M, Immokalee, Fla. 33934

Filed Jan. 10, 1973, Ser. No. 322,548
Int. Cl. B65d *1/36*
U.S. Cl. 229—15 **6 Claims**



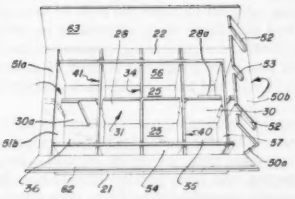
1. A carton for packaging produce or other articles, said carton comprising a panel of generally rectangular configuration including opposite side generally planar panel sections joined along a center fold line extending longitudinally of said panel, the side marginal edges of said panel sections remote from said fold line including generally right-angled side flanges generally paralleling and equally spaced from said fold line and projecting outwardly of one pair of corresponding sides of said panel sections, the opposite ends of said panel sections each including a generally right-angled end flange extending along substantially the full length of the corresponding panel section end edge and of a width at least generally equal to the width of the corresponding side flange, said end flanges also projecting outwardly from said corresponding sides of said panel sections, said panel being foldable along said fold line to swing said panel sections into parallel closely juxtaposed relation with the other pair of corresponding sides of said panel sections opposing each other and said end flanges at each end of said panel disposed in substantially coplanar relation, whereby each pair of end flanges at an end of said panel define an end wall for said carton and said panel sections, exclusive of said side and end flanges define a double thickness upstanding partition extending centrally lengthwise along said carton between said end walls and said side flanges define bottom sections of said carton on opposite sides of said partition extending between said end walls, said bottom sections being substantially coplanar.

3,861,579

FOLDABLE CONTAINER

Charles A. Manis, and Charles E. Wood, both of Arlington, Tex., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Jan. 24, 1973, Ser. No. 326,371
Int. Cl. B65d *13/00*
U.S. Cl. 229—23 R **12 Claims**

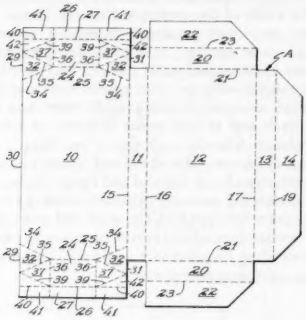


1. A foldable container formed from two blanks of sheet material, comprising foldably connected upright side and end walls; first panels connected to the lower portion of said side walls and folded inwardly forming an outer bottom delimited by said side and end walls; a sectional partition extending upright from said outer bottom and spaced from said side walls, sections of said partition being connected to said first panels, second panels connected to lower portion of said end walls and folded into overlying relation with said first panels; third panels connected to said second panels and forming upright partitions disposed transversely of said first mentioned partition, fourth panels connected to the upper portion of said end walls and folded inwardly and downwardly and having portions thereof spaced from the interior surface of said end walls and interlockingly engaging said first mentioned partition; and a separate frame member formed from one of said blanks and having foldably connected upright wall segments spaced inwardly from said side and end walls and interlockingly engaging said upright partitions; said frame member and said partitions cooperating to form a plurality of contiguous article-accommodating compartments within the container interior.

3,861,580
BOOK FOLDER

William G. Sieffert, Joliet, Ill., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed Oct. 24, 1973, Ser. No. 409,185
Int. Cl. B65d 5/02
U.S. Cl. 229—40 5 Claims



1. A blank for forming a book folder including a first main panel, a first side panel, a second main panel, a second side panel, and a side glue flap connected in series along parallel fold lines, an end panel secured to each end of said second main panel along end fold lines which are at right angles to said parallel fold lines, end glue flaps secured to said end panels along fold lines extending at right angles to said parallel fold lines, said first and second main panels and said first and second side panels being adapted to form a tubular body with said side glue flap adapted to be secured to said first main panel to hold said tubular body in tubular relation, said end panels being adapted to close the ends of said tubular body, and said end glue flaps being adapted to be secured to said first main panel and a cushioning structure connected to each end of said first main panel and defined by extensions of the side edges of said first main panel, each cushioning structure including:

a rectangular cushioning panel defined by parallel first and second cushioning panel fold lines spaced apart a distance greater than the width of said side panels, and connecting fold lines parallel to said parallel fold lines and equally spaced from said first main panel edge extensions,

first isosceles triangular areas having their base sides extending along said first main panel extensions and their equal length sides converging from said base to apexes at an end of said first cushioning panel fold line,

second isosceles area having their bases extending along said connecting fold lines and having their equal lengths sides converging from the ends of said connecting fold lines to apexes at said extensions of said edges of said first main panel,

said second cushioning panel fold line having extensions extending to the extending edges of said first main panel and defining right triangular areas having their bases extending along said edge extensions of said first main panel and their hypotenuse sides hingedly connected to an equal length side of said second isosceles triangular area,

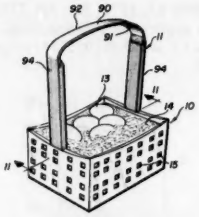
rectangular bearing flaps hinged to said cushioning panel along said second cushioning panel fold lines and adapted to fold into edge abutting relation to said first main panel and

rectangular reinforcing flaps hinged to the sides of said bearing flap and to the right triangular edges of said right triangular areas and adapted to fold into edge abutting relation to said first main panel.

3,861,581
BASKET

Thomas J. Sellors, Waukegan, Ill., assignor to The Finn Industries Div., Patlatch Forests, Inc., Chicago, Ill.

Filed Dec. 18, 1972, Ser. No. 315,876
Int. Cl. B65d 5/36, 5/46, 5/50
U.S. Cl. 229—41 B 2 Claims



1. A knocked down basket comprising, cut from a single sheet of material, a plurality of outer wall portions formed by three fold lines to form thereby three mutual intersecting edges,

a plurality of inner wall portions extending from the upper portion of the outer walls and of generally isosceles trapezoidal configuration,

a top edge portion defined by the fold at the intersection of the inner wall and outer wall portions,

mounting feet at the portion of the inner walls opposed to the top edge portion, each of said mounting feet having beveled side edges and defined by lines of weakness which permit folding of the same against the bottom of the basket upon erection,

base forming flaps extending from the lower edge of each of the outer walls proportioned and oriented, upon securing by fastening means, to form a bottom for the basket whereby the same may be shipped in knocked-down fashion,

said bottom including four opposed flaps with two of said flaps being spaced with respect to each other by a shorter flap, and each including a tug tab,

said mounting feet and tug tab portions of said base forming flaps interacting upon biasing to flat and reopening after positioning said inner walls and mounting feet in position to interlock by positioning one end of each of said mounting feet beneath a corresponding base forming flap at one end, thereby to automatically form an interlocked bottom,

and flap means for securing the fourth edge of the outer walls together in an enclosed perimeter completing a basket construction having an automatically interlocked bottom, outer walls, inner walls, a top edge portion, and means for footing the inner walls in interlocked relationship to the base forming flaps when biased to the flat and reopened.

3,861,582
CARTON

Robert F. Bock, 817½ 5th Ave., North, Seattle, Wash. 98109

Filed Apr. 16, 1973, Ser. No. 351,498
Int. Cl. B65d 45/00
U.S. Cl. 229—45 5 Claims

1. In a cardboard container of the type comprising a lower rectangular box portion framed by walls upstanding at the periphery of a rectangular bottom panel, said box portion being provided with a cover panel hinged along the upper edge of the rear wall thereof,

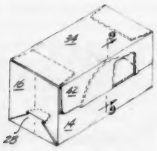
a downwardly extending keeper wall along the upper external face of the front wall of said box portion, opposite said rear wall;

said keeper wall being narrower than said front wall and fixedly secured at its opposite ends to permanently lie against the upper external face of said front wall;

a lock flap hingedly joined to the cover panel and located to depend in outward juxtaposition to said keeper wall, said keeper wall being narrower than said lock flap;

a lock tongue hinged to the lower edge of said lock flap;

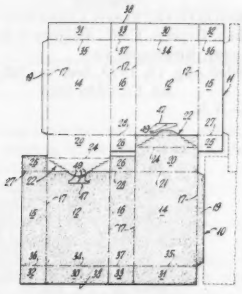
said lock tongue being narrower than said lock flap and being line scored parallel to its hinged connection to said



lock flap to divide the same into an entrant portion and an intermediate portion;

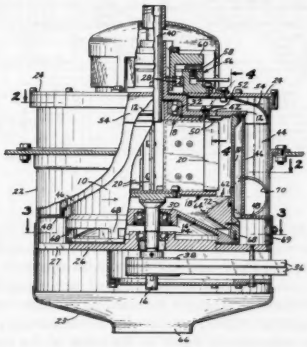
the width of said intermediate portion between said lock flap and said entrant portion being such that when said entrant portion is introduced behind the lower edge of said keeper wall and the score line between the entrant portion and the intermediate portion is disposed substantially adjacent to said keeper wall lower edge, the angular relation of said intermediate portion to said flap is greater than a right angle.

3,861,583
RECLOSABLE CARTON
William E. Tingley, Westport, Conn., and Joseph Addiego, Bayside, N.Y., assignors to Nabisco, Inc., New York, N.Y.
Filed May 7, 1973, Ser. No. 357,798
Int. Cl. B65d *5/54*
U.S. Cl. 229—51 TC **5 Claims**



1. A one piece blank for forming a reclosable carton cut and creased to provide a plurality of interconnected panels including front, back and side panels having top and bottom and side edges and serially connected to each other at their side edges along a first set of parallel crease lines, and a top and a reclosure panel serially connected to each other and to the top edge of the back panel along a second set of parallel crease lines transverse to said first set, whereby two carton blanks having their respective front and closure panels in alignment are cut from a section of paperboard with minimum waste, said closure panel being spaced from said back panel by said top panel to overlie the top portion of the front panel of the carton when erected, said closure panel being formed with a central tab on the free edge thereof and outer corner portions to be glued to the front panel to initially close the erected carton and a pair of perforated tear lines extending from the sides of said tab to separate a main portion of the panel from said outer corner portions for opening the carton, said front panel being formed with a slit for receiving said tab for reclosing the erected carton.

3,861,584
SELF-PURGING CENTRIFUGE
Denis J. Dudrey, Minneapolis, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.
Filed June 20, 1973, Ser. No. 371,854
Int. Cl. B04b *9/06*
U.S. Cl. 233—7 **9 Claims**



1. A self-purging centrifuge, comprising:

a. a drum having a side wall and a top wall member, mounted for rotation about a generally vertical axis;

b. a rotor assembly coaxially mounted in said drum for independent rotation with respect to said drum, said rotor assembly comprising a plurality of vanes having the outer edges thereof spaced a substantial distance from said side wall of said drum;

c. means for introducing a fluid containing solid particles to be separated therefrom, into said rotor assembly;

d. means for driving said rotor assembly at a predetermined rotational speed to throw the fluid and solid particles outwardly toward said drum side wall, said fluid rotating therewith, and said rotating fluid in turn causing rotation of said drum;

e. said top wall having openings therein for discharging clarified fluid, said openings each having an outer edge spaced from said side wall;

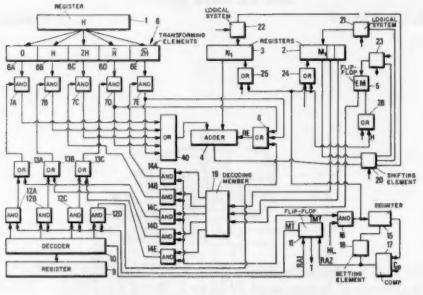
f. an annular baffle extending inwardly from the bottom of said drum side wall, to define with said top wall, said side wall and said outer edges of said vanes a particle collection area therebetween, said baffle having an inner edge spaced from said side wall a greater distance than the outermost edges of said openings in said top wall; and

g. means for abruptly slowing the rotation of said drum, to initiate a purge cycle by disrupting the rotating fluid and thereby resuspending the separated particles in the fluid, said liquid and resuspended particles draining from said drum over said baffle during the purge cycle.

3,861,585
DEVICE FOR CARRYING OUT ARITHMETICAL AND LOGICAL OPERATIONS

Pierre Courboulay, Paris; Jacques Cretin, Le Chesnay; Francois Anceau, Gieres, and Claude Beauducel, Franconville, all of France, assignors to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Malmaison, France

Filed Mar. 2, 1973, Ser. No. 337,369
Claims priority, application France, Mar. 6, 1972, 72.07787
Int. Cl. G06f 7/39
U S. Cl. 235—164 **18 Claims**



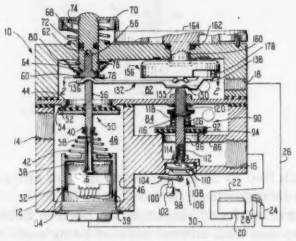
1. A device for carrying out arithmetical and logical operations upon control of a microprogram comprising first, second and third registers, adapted to contain operands to be processed, consisting of a series of bits of increasing significance, one additional element for memorizing the least significant bit of the second register, means for simultaneously producing numbers respectively equal to the value of the operand contained in the first register, to its conjugated value, to twice the value of the operand, to the conjugated value of twice the value of the operand and to zero, means for adding two binary numbers, an assembly for decoding the two less significant bits of the second register and the bit contained in the additional element, means for shifting the numbers contained in the adding means and in the second register, means for transmitting these numbers, after shifting thereof, to the third register, the second register and to the additional element, means for decoding microinstructions issued from a microprogram, means for transferring to the adding means one of the numbers produced by the producing means, first means for controlling the transfer of the orders contained in the decoded microinstruction, on the one hand, to the control inputs of the transferring means and on the other hand to the adding means, second means for controlling the transfer of the signals produced by the decoding assembly to the control inputs of the transferring means, means responsive to the decoding means for memorizing an order for multiplying two operands placed in the first and in the second register, said memorizing means being adapted to actuate either the first controlling means or the second controlling means in accordance with the decoded microinstruction relating respectively to a multiplication of the two operands or another operation.

3,861,586
THERMOSTATIC FLOW CONTROL DEVICE

Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 15, 1973, Ser. No. 388,692
Int. Cl. F23q 9/08
U.S. Cl. 236—1 H **19 Claims**

1. A thermostatic flow control device comprising
a casing having inlet means adapted to receive fuel from a source, outlet means adapted to supply the fuel to a burner, and flow passage means disposed between said inlet means and said outlet means;
safety valve means including a safety valve seat disposed in said flow passage means, a safety valve member cooperating with said safety valve seat for controlling fuel flow through said flow passage means and first axially movable means for controlling movement of said safety valve member;
safety means controlling operation of said safety valve means in response to the existence of a flame at the burner;

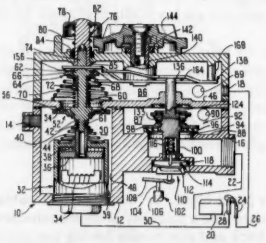


thermostatic valve means including a thermostatic valve seat disposed in said flow passage means, a thermostatic valve member cooperating with said thermostatic valve seat to control fuel flow through said flow passage means, and second axially movable means controlling movement of said thermostatic valve member;
thermostat means controlling operation of said thermostatic valve means in response to temperature variations; and
selector means for simultaneously controlling said safety valve means and said thermostatic valve means including a lever engaging said first and second axially movable means to control axial movement thereof.

3,861,587
THERMOSTATIC FLOW CONTROL DEVICE

Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 15, 1973, Ser. No. 388,693
Int. Cl. F23q 9/08
U.S. Cl. 236—1 H **15 Claims**



1. A thermostatic flow control device comprising
a casing having inlet means adapted to receive fuel from a source, outlet means adapted to supply the fuel to a burner, a flow passage means disposed between said inlet means and said outlet means;
safety valve means including a safety valve seat disposed in said flow passage means, a safety valve member cooperating with said safety valve seat to control fuel flow through said flow passage means, and first axially movable means controlling movement of said safety valve member;

safety means controlling operation of said safety valve means in response to the existence of a flame at the burner;

thermostatic valve means including a thermostatic valve seat disposed in said flow passage means, a thermostatic valve member cooperating with said thermostatic valve seat to control fuel flow through said flow passage means, and second axially movable means controlling movement of said thermostatic valve member;

thermostat means controlling operation of said thermostatic valve means in response to temperature variations; and

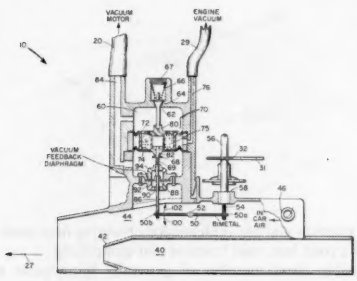
selector means for simultaneously controlling said safety valve means and said thermostatic valve means including a cam member having cam surfaces engaging said first and second axially movable means to control axial movement thereof, said cam member being rotatable to control said first and second axially movable means and including a disc-like configuration with said cam surfaces having varying arcuately arranged levels.

3,861,588

THERMOMECHANICAL AUTOMATIC TEMPERATURE CONTROL UNIT

George T. Bata, Grafton; Raymen F. Emery, Yorktown, and Theodore L. Knight, Newport News, all of Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sept. 20, 1973, Ser. No. 399,233
Int. Cl. G05d *23/13*; G05b *11/50*
U.S. Cl. 236—13 **13 Claims**



1. A vacuum regulator for use in an automatic temperature control system wherein temperature is controlled in response to controlled vacuum comprising:

a source of vacuum;

a pressure source;

a sealed chamber, the vacuum within which comprises said controlled vacuum;

a first valve means for communicating said sealed chamber with said pressure source when open and including means for biasing said first valve means closed;

floating means within said chamber connected to said first valve means and biased by said first valve means in a second direction while said first valve means is open, said floating means having an interior volume which communicates with said source of vacuum, said first valve means being opened when said floating means moves in a first direction to a first predetermined position and responsive to movement of said floating means in a second direction to a second predetermined position for allowing said first valve means to close;

second valve means cooperating with said floating means for communicating the interior volume of said floating means with said sealed chamber when open and including second means for biasing said second valve means closed, said floating means being biased in said first direction by said second valve means when closed;

bimetal means for generating a first force in response to change in the temperature to be controlled; and,

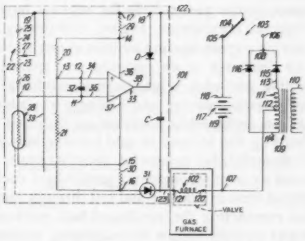
a vacuum feedback diaphragm for generating a second force in response to pressure difference thereacross to accumulate with said first force, said pressure difference being related to said controlled vacuum and including means connecting said bimetal means, said vacuum feedback diaphragm and said second valve means and along which said first and second forces accumulate and act; wherein said second valve means is closed and causes said floating means to move in said first direction in response to the accumulation of said first and second forces over a predetermined threshold.

3,861,589

TEMPERATURE CONTROL SYSTEM AND THERMOSTAT THEREFOR

Elmer A. Carlson, Agoura, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 344,070, March 23, 1973, Pat. No. 3,831,054. This application Mar. 12, 1974, Ser. No. 450,288
Int. Cl. G05d *23/00*
U.S. Cl. 236—68 B **10 Claims**

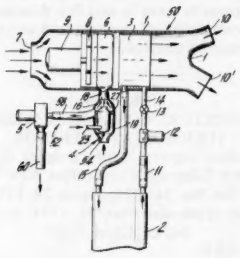


1. A temperature control system comprising: a thermostat located in a space, the temperature of which is to be controlled, said thermostat having first and second leads; a power supply having first and second leads; and a device actuable to change the heat content of said space, said device having first and second leads, the second lead of said device being connected to the second lead of said power supply, the first lead of said power supply being connected to the first lead of said thermostat, the first lead of said device being connected to the second lead of said thermostat, said thermostat including a first resistor, a second resistor, a third resistor, a fourth resistor, a first junction, a second junction, a third junction, a fourth junction, a fifth junction, and a sixth junction, said third resistor being connected from one of said fourth and sixth junctions to said first junction, said fourth resistor being connected from the other of said fourth and sixth junctions to said first junction, said third and sixth junctions being connected together, said thermostat first lead being connected to said sixth junction, said first resistor being connected from said third junction to said second junction, said second resistor being connected from said second junction to said fifth junction, said third resistor being variable, said fourth resistor being temperature sensitive, said fourth junction being connected to said fifth junction, said fifth junction being connected to said thermostat second lead, said thermostat also including a differential amplifier having a first signal input lead, a second signal input lead, a first power input lead, a second power input lead, and an output lead, said first power input lead being connected to said third junction, said second power input lead being connected to said fourth junction, said first signal input lead being connected from said first junction, said second signal input lead being connected from said second junction, said output lead being connected to said thermostat first lead.

3,861,590
SPACE HEATER PARTICULARLY FOR VEHICLES

Siegfried Kofink, Zell/Neckar, Germany, assignor to J. Eberspacher, Nackar, Germany

Filed May 2, 1973, Ser. No. 356,382
Claims priority, application Germany, May 20, 1972, 2224711
Int. Cl. B60h 1/08
U.S. Cl. 237—12.3 C 3 Claims

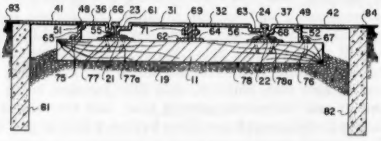


1. A space heater particularly for vehicles having a water cooled internal combustion engine, comprising a tubular housing having a space heating air inlet at one end and a space heating air discharge at an opposite end spaced from said space heating air inlet, a gas/air-heat exchanger disposed across said tubular housing and having a gas inlet and a gas outlet, and an air/liquid-heat exchanger disposed across said tubular housing and located in said housing between said air inlet and air outlet, fan means for directing space heating air through said air inlet through said gas/air-heat exchanger and said air/liquid-heat exchanger and out through said air outlet, means for connecting the air-/liquid-heat exchanger to the engine water cooling system for supplying cooling water to said air/liquid-heat exchanger, a separate burner outside of said tubular housing having a combustion chamber with means for adding fuel and air thereto and for igniting the mixture for generating combustion gases therein, conduit means connecting said combustion chamber to said gas inlet of said gas-air inlet exchanger for flow therethrough in heat exchange relationship with air passing through said tubular housing, means for adding additional air to the combustion gases passing through said conduit means between said combustion chamber and said gas inlet to cool them, and a gas suction pump connected to said gas outlet for withdrawing the combustion gases from said gas/air-heat exchanger.

3,861,591
RAILROAD CROSSING CONSTRUCTION

Roger F. Rector, 1720 Birchcrest Rd., Columbus, Ohio 43221

Filed May 21, 1973, Ser. No. 361,972
Int. Cl. E01c 9/02
U.S. Cl. 238—8 9 Claims

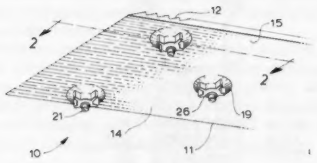


1. A railroad crossing construction comprising:
a plurality of railroad ties;
a pair of rails secured to said ties;
a main traffic plate for each rail, such plate contacting one of said rails on one side of the rail and resting on the flange of said rail and extending away from such rail in a direction toward the other rail so that there is an inwardly extending main plate;
an outwardly extending support for each rail;
an outwardly extending auxiliary hinged plate pivotally connected to a portion of each of the outwardly extending supports; and
roadway supports for the outer ends of said outwardly extending auxiliary plates
in which each outwardly extending support is an outwardly extending main traffic plate;
in which there is also provided means for securing the outer portion of each of said outwardly extending main traffic plates to an outer portion of one of the associated ties;
in which each of the main traffic plates is formed with a downwardly extending flange at each end;
in which the two inner flanges of the two inwardly extending plates are separated from each other by a spacing strip which is not a conductor of electricity; and
in which the flanges at the outer ends of the outwardly extending main traffic plates are secured to the outer end of the associated tie by a railroad spike.

3,861,592
TRACTION MAT

Sandor Jehuda Fisher, 589 Palmerston Ave., Toronto, Ontario, Canada

Filed June 29, 1973, Ser. No. 375,002
Int. Cl. B60c 27/00
U.S. Cl. 238—14 8 Claims



1. A traction mat for vehicles, for obtaining increased traction on a road bed, said traction mat comprising;
a flexible sheet member of generally rectangular shape having two ends and of predetermined thickness;
sleeve means formed integrally with said sheet member at spaced intervals therealong having a length greater than the thickness of said sheet member, and extending from said sheet member along axes angled relative to the plane of said sheet member, said sleeve means being closed at one end and open at the other whereby to define blind ended socket-like openings extending from the open end of said sleeve means into said sheet member, and,
metallic stud means secured within said sleeve means, having inner ends seating on said closed ends of said sleeves and outer ends extending from the open ends thereof.

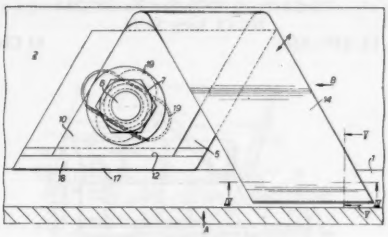
3,861,593
RAIL FASTENING DEVICES

Alan Gordon Senior, Weybridge, and Warwick Scott Faville, London, both of England, assignors to Kins Developments Ltd., Surrey, England

Filed Oct. 5, 1973, Ser. No. 403,881
Claims priority, application Great Britain, Oct. 5, 1972, 46066/72
Int. Cl. E01b 21/04
U.S. Cl. 238—349 9 Claims

1. A rail fastening clip comprisisng a resilient parallelsided strip deformed to define a base part for attachment to a support with an edge extending between the said sides and adapted to extend towards a rail flange, an outer part extending upwardly from the base part and terminating in a toe

engageable with a rail flange, the toe having an edge extending between said parallel sides, and the clamping part being angled relative to the base part to diverge from the base part in the direction of the toe to provide direct access to a fastening member when received by an aperture in the base part.



3,861,594
APPARATUS AND METHOD FOR SIMULTANEOUSLY PAINTING BOTH SIDES OF A WIRE FENCE

Paul R. Wendling, 885 Hereford Dr., Akron, Ohio 44303

Filed Dec. 28, 1973, Ser. No. 429,053
Int. Cl. B05b *17/00;* **B44d** *1/08*
U.S. Cl. 239—1 **6 Claims**

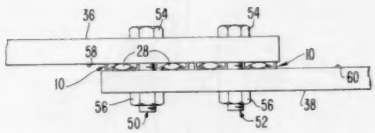
1. A spraying apparatus for simultaneously applying paint to the facing and opposite sides of a wire fence from one of the sides comprising: a hood having a mouth of generally rectangular configuration, flange means extending outwardly from said mouth to inhibit the flow of air into said hood from behind said mouth and a body gradually tapering to a rear flange; at least one nozzle carried by said hood externally of said body for spraying the paint beyond said mouth, against the facing side of the fence and therethrough; and, a fan mounted in communication with said rear flange to draw air from the opposite side of the fence, thereby to capture only the paint having passed through the wire fence and paint the opposite side thereof as the paint and flow of air pass into and through said hood and said apparatus.

3,861,595
ELECTRICAL CONDUCTOR WITH STANDOFF MEANS

Robert S. Deal, Mountain View, Calif., assignor to Multilam Corporation, Los Altos, Calif.

Filed Jan. 15, 1973, Ser. No. 323,611
Int. Cl. H01r *7/08*
U.S. Cl. 339—95 R **9 Claims**

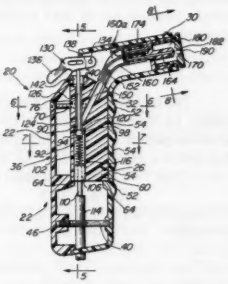
1. An electrical conductor comprising a circular body of electrially conducting material, said body having a central hole therethrough, a first pair of circular strips surrounding the hole, a second pair of circular strips surrounding and being spaced from the first pair of strips, each pair of strips including an inner strip and an outer strip, and a plurality of louvers spanning the distance between the first and second pairs of strips, the louvers being at acute angles relative to said strip pairs and being substantially radial to the central axis of the hole; a continuous lateral flange integral with the inner strip of the first pair, whereby the flange surrounds the hole; and a second flange integral with the outer strip of the second pair, the inner strip of the first pair and the outer strip of the second pair being in a first plane, the outer strip of the first pair and the inner strip of the second pair being in a second plane parallel to the first plane, each louver projecting outwardly in opposed directions from the second plane through a predetermined distance, the width of each flange being less than two times the distance, whereby the louvers will engage the working surfaces of a pair of terminals when the connector is disposed therebetween before the flanges engage said working faces.



3,861,596
SPRAY GUN MECHANISM

Robert Nathan, Highland Park, and Morton Fox, DesPlaines, both of Ill., assignors to DeMert & Dougherty, Inc., Northbrook, Ill.

Filed July 18, 1973, Ser. No. 380,185
Int. Cl. B05b *7/04, 7/06, 7/12*
U.S. Cl. 239—415 **7 Claims**



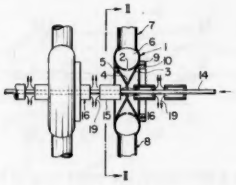
1. A spray gun assembly including a housing having first and second housing sections releasably interconnected, a valve cartridge, releasable means connecting said cartridge to one housing section, said cartridge having first conduit means for connection to a pressurized gas line and second conduit means for connection to a liquid spray material line, a fluid mixing zone in said one housing section and in communication with discharge ports of said conduit means, orifice means on said one housing section for dispensing an atomized mixture of gas and liquid from said mixing zone, and control means for controlling the passage of gas and liquid from said conduit means into said mixing zone, said control means comprises first and second valve means within respective each said first and second conduit means for controlling, respectively, flow of gas and flow of liquid through said conduit means, means for opening and closing each said first and second valve means in a coordinated unitary operation to (1) open said first conduit means before said second conduit means and (2) close said second conduit means before said first conduit means to insure that all of said liquid is discharged from said mixing chamber.

3,861,597

APPARATUS FOR COOLING METAL MATERIAL

Takao Tsukamura, and Koji Nakayama, both of Hikari, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed July 25, 1973, Ser. No. 382,387
Claims priority, application Japan, July 27, 1972, 47-75455; July 27, 1972, 47-88582; Aug. 11, 1972, 47-80472
Int. Cl. B05b *1/04*
U.S. Cl. 239—536 7 Claims



1. An apparatus for cooling longitudinally moving metal material, said apparatus comprising:

a circular cooling pipe positioned to coaxially surround the path off movement of said material, said cooling pipe being supplied at the interior thereof with a cooling medium;

said cooling pipe having around the inner annular surface thereof opening means to allow passage therefrom of said cooling medium;

an annular nozzle provided n said inner annular surface of said cooling pipe, said annular nozzle being formed of disk-shaped walls having central openings therethrough, said walls being operatively connected at the outer annular edges thereof to said cooling pipe at opposite sides of said opening means; and

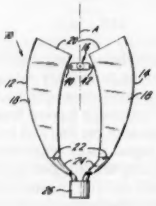
the inner annular edges of said walls being spaced to form therebetween annular slit means for directing and focusing a single laminar jet of said cooling medium against said material.

3,861,598

NOZZLE ARRANGEMENT

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424

Continuation-in-part of Ser. No. 359,695, May 15, 1973, abandoned, which is a division of Ser. No. 235,293, March 16, 1972, Pat. No. 3,769,753. This application Dec. 26, 1973, Ser. No. 428,203
Int. Cl. B05b *1/26*; F23d *11/36*
U.S. Cl. 239—543 15 Claims



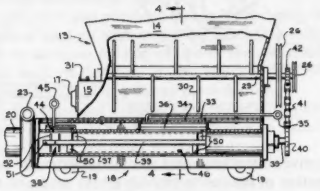
1. A nozzle arrangement adapted to be connected to a source of material to be sprayed, comprising, in combination, at least a pair of nozzles, and connecting means for connecting said nozzles to each other in a manner such that said nozzles are disposed at an angle to a vertical plane passing through said connecting means so as to form a first V-like shape and said nozzles are canted at an angle to a horizontal plane passing through said connecting means so as to form a second V-like shape.

3,861,599

INSULATION SPRAY APPARATUS

Robert A. Waggoner, Spencerville, Ohio, assignor to U.S. Fiber Corporation, Delphos, Ohio

Filed Aug. 10, 1973, Ser. No. 387,264
Int. Cl. B65g *53/16*
U.S. Cl. 239—654 13 Claims



1. Apparatus for spraying dry material mixed with a liquid against a substrate, comprising

a hopper for containing the dry material, said hopper having an upper portion and a lower portion,

hopper agitating means within said hopper for initially breaking up and agitating the compacted dry material,

motor means for rotating said hopper means,

a dry material conduit having an inlet in flowing communication with said hopper and having an effluent end,

means adjacent said conduit and said hopper for regulating the flow of dry material into and through said conduit,

a paddle agitator operationally mounted within said conduit, comprising a rotatable shaft, drive means connected to said shaft, and paddle agitator means on said shaft for breaking, agitating and smoothing the dry material into a smooth even flow, said paddle agitator means comprising a plurality of paddle blades and stirring rods mounted for rotation with said shaft in said conduit, said paddle blades being angularly and uniformly mounted on said shaft, whereby said paddle agitator acts as a conveyor within said conduit as well as a smoothing agitator of the dry material,

blower means operatively connected to said effluent end for delivering the dry material,

hose means in communication with said blower means for conducting the dry material,

means for supplying a liquid for mixing with the effluent dry material from said hose means, and

spray nozzle means operatively connected to said liquid supplying means and said hose means.

3,861,600

SPREADING DEVICE COMPRISING A RECIPROCATORY SWINGING DISTRIBUTION PIPE

Pieter Adriaan Oosterling, Nieuw-Vennep, and Johannes Philippus Hooftman, Hoofddorp, both of Netherlands, assignors to H. Vissers N.V., Nieuw-Vennep, Netherlands

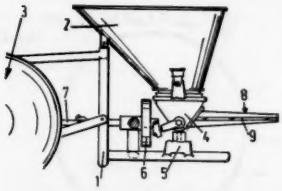
Filed Feb. 26, 1973, Ser. No. 335,660
Claims priority, application Netherlands, Mar. 1, 1972, 7202731
Int. Cl. A01c *3/06*
U.S. Cl. 239—689 4 Claims

1. A device for spreading particulate material such as granular fertilizer, which comprises:

hopper means for containing a supply of material to be distributed and including a body portion rotatably mounted for rotation about an upstanding axis and adapted to be fed with supply material;

drive means connected to said body portion for oscillating said body portion about said axis; and

an elongate and elastic distribution pipe having a proximal end connected to and in communication with said body portion and a distal end remote from said axis whereby said distal end of the pipe whips back and forth in a plane perpendicular to said axis to fling and distribute the particulate material over a wide area, said distribution pipe being made of plastic material and having a wall thickness which decreases from its proximal to its distal ends whereby materially to diminish inertia loading on the pipe.



3,861,601

APPARATUS FOR THE COMMINUTION OF DOMESTIC REFUSE

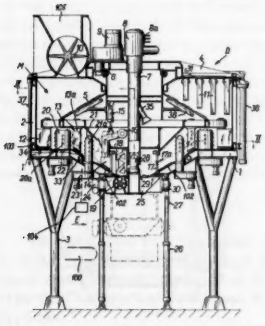
Joseph Richard Kaelin, Villa Seeburg, Buochs, Switzerland

Continuation of Ser. No. 219,331, Jan. 20, 1972, abandoned. This application Jan. 4, 1974, Ser. No. 430,881

Claims priority, application Switzerland, Jan. 26, 1971, 1162/71

Int. Cl. B02c *11/06, 18/40*

U.S. Cl. 241—31 **31 Claims**



1. Equipment for the comminution of domestic refuse comprising, in combination, a container having an open top; removable closure means closing said container; the interior of said container defining a disintegration compartment for the material; a pin mill in said container rotatably supported by said closure means and including pin members disposed substantially parallel to the axis of rotation of said pin mill; a material inlet in said closure means adjacent the external periphery of said pin mill; a material discharge in said container adjacent the central portion of said container; and means operable to displace the material throughput from the external periphery of said pin mill toward the central portion of said container; said disintegration comparment decreasing in diameter from a region adjacent the periphery of said pin mill to said discharge outlet.

3,861,602

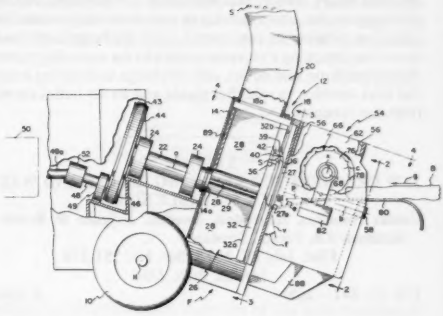
BRUSH CHIPPER

Leward N. Smith, Remus, Mich., assignor to Morbark Industries, Inc., Winn, Mich.

Filed July 6, 1973, Ser. No. 376,959

Int. Cl. B02c *18/08*

U.S. Cl. 241—92 **30 Claims**



1. Apparatus for reducing material such as trees, brush, and the like to chips comprising:

a frame provided with a chipping station;

means on said frame for conveying said material forwardly toward said chipping station; and

chipping means on said frame at said chipping station for cutting said forwardly moving material into chips, including

a chipping disc, having an upstream rear face and a downstream front face, rotatable about an axis,

a single, generally radially disposed, chipping knife means mounted on said disc for cutting said forwardly moving material into chips at said chipping station as said chipping disc rotates;

said disc being unslotted except for a single slot extending from said rear face to said front face adjacent said knife means to receive and axially forwardly pass said chips; and

means fixed for rotation with said disc downstream of said slot and generally axially aligned therewith for statically balancing said chipping means.

3,861,603

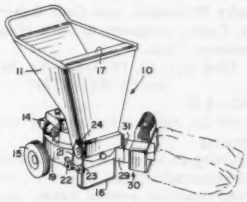
LEAF SHREDDER WITH IMPROVED MATERIAL FEEDING AND DISCHARGING APPARATUS

Robert D. Lautzenheiser, Bluffton, Ind., and Howard M. Ullman, Jr., 04, Bluffton, Ind., assignors to The Red Cross Manufacturing Corp., Bluffton, Ind., by said Lautzenheiser

Filed Jan. 21, 1974, Ser. No. 434,799

Int. Cl. B02c *18/12*

U.S. Cl. 241—100 **11 Claims**



1. A shredding machine having a housing including a compartment defining a shredding space having an inlet, a material loading chute discharging material to said inlet, one or

more rotary knives in the shredding compartment, a rotary feeder mechanism located adjacent to said inlet for mechanically feeding material from said chute through said inlet, the axis of said rotary knives and the axis of said rotary feeder mechanism being disposed at an angle to each other and said feeder mechanism being located tangentially in relation to said rotary knives, power means for driving said rotary knives and said rotary feeder, said shredding compartment having a discharge outlet, and a discharge unit removably mounted in operative relation to said outlet, said discharge unit having means for attaching a receptacle thereto for receiving material discharged from said outlet, said discharge unit having a material inlet opening to said receptacle and an air outlet opening from the receptacle.

3,861,604

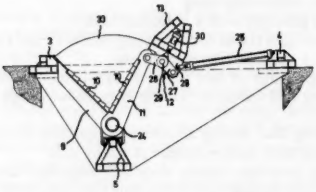
JAW CRUSHERS FOR REDUCING REFUSE AND WASTE TO A SUITABLE SIZE

Gustav Nobelius, Hagersten, Sweden, assignor to Bruun & Sorensen AB, Farsta, Sweden

Filed July 20, 1973, Ser. No. 381,239

Int. Cl. B02c *1/04*

U.S. Cl. 241—269 **5 Claims**



1. An apparatus for crushing materials which comprises a base frame; a plurality of jaws alternately arranged in a pair of opposed jaw assemblies supported by said base frame for relative pivotal movement; powered actuator means connected to one of said jaw assemblies and operable to forcibly move same toward the other jaw assembly to crush materials placed between said jaw assemblies, said actuator means including a first actuator operable to move said one jaw assembly over a given displacement with a given maximum force, a second actuator operable to move said one jaw over an additional given displacement less than that of the first actuator and with a maximum effective force greater than that of the first actuator, and linkage means connected to said first and second actuators and connected to said one jaw assembly to impart thereto cumulative movements of said first and second actuators.

3,861,605

SHUTTLE FOR COIL WINDING MACHINE

Henry Stanley Walendzik, and Gene Robert Bailey, both of Danbury, Conn., assignors to Jovil Manufacturing Company, Danbury, Conn.

Filed Apr. 10, 1973, Ser. No. 349,816

Int. Cl. H01f *41/08*

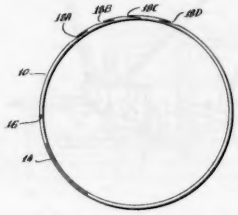
U.S. Cl. 242—4 B **1 Claim**

1. A shuttle for use in a machine for winding strand on a core, comprising

a. a ring having an inner and an outer wall, said walls being spaced from each other,

b. a strand-receiving groove having a pair of sidewalls formed in said outer wall of said ring, one of said pair of sidewalls being of winding-unwinding sidewall over which the strand is wound or removed during a coil winding operation,

c. at least one wedge-shaped slot formed in the other of said sidewalls of said groove, said slot receiving and anchoring a strand inserted therein when strand is to be wound on said shuttle, and



d. a break formed in said shuttle to permit the shuttle to be mounted on the core, said break being formed roughly 90° behind said slot.

3,861,606

YOKE APPARATUS FOR YARN CARRIERS

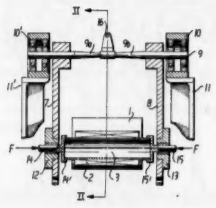
Jacques Loquineau, Commelle-Vernay, and Rolland Sartori, Riorges, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed June 26, 1973, Ser. No. 373,785

Claims priority, application France, June 26, 1972, 72.23276

Int. Cl. B65h *54/42*

U.S. Cl. 242—18 DD **10 Claims**



1. Apparatus for mounting a yarn carrier for winding a textile yarn thereon said yarn carrier being driven by a peripheral drive, including a pair of arms,

means for joining said arms in spaced substantially parallel relationship,

a pivot at one end of each arm, said pivots being coaxially aligned with each other, said arms each having

yarn-carrier mounting means aligned with each other remote on said arms from said pivots,

bias means for biasing said arms toward the peripheral drive,

and flexing means including an elastic linkage in said joining means for permitting angular displacement of said arms with respect to each other.

3,861,607

HIGH-SPEED CROSS-WINDING DEVICE

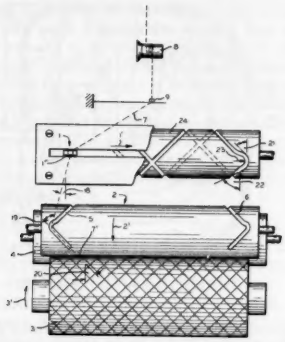
Heinz Schippers, and Erich Lenk, both of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Continuation-in-part of Ser. No. 170,009, Aug. 9, 1971,. This application Sept. 14, 1972, Ser. No. 289,152

Claims priority, application Germany, Aug. 14, 1970, 2040479

Int. Cl. B65h *54/28, 54/38*

U.S. Cl. 242—43 **14 Claims**



1. A high speed winding apparatus comprising a traverse device having spiral grooves with stroke reversal zones for guiding the thread in traverse strokes, said traverse device being a rotatably driven, cylindrical, traverse roller with said spiral grooves in the cylindrical surface thereof, and said spiral grooves being crossing grooves of opposite hand respectively progressively increasing in depth from a shallowest segment at or below the surface of said roller and in the longitudinal midportion of the roller to a point of maximum depth preceding the point of stroke reversal of the respective grooves, which maximum depth continues to a point immediately before, at or immediately following the stroke reversal point in each stroke reversal zone, and said crossing grooves thereafter progressively decreasing in depth at a sharper rate of inclination than the inclination of the first mentioned portion of said groove, and thereafter further decreasing in depth at a rate of inclination less than said sharper rate of inclination to a shallowest segment at or below the surface of said roller.

3,861,608

TRAVERSING MECHANISM

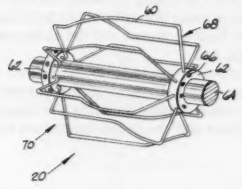
John Gilbert Mohr, Maumee; James William Hartman, and David Michael Arno, both of Toledo, all of Ohio, assignors to Johns-Manville Corporation, Greenwood Village, Arapahoe County, Colo.

Filed Oct. 29, 1973, Ser. No. 410,679

Int. Cl. B65h *54/28*

U.S. Cl. 242—43 **11 Claims**

1. An apparatus for winding a plurality of continuous strands of flexible material about a core to form a package which apparatus includes a source of said strands, means for rotating said core about a first axis, a traversing mechanism rotatable about a second axis parallel to said first axis and adjacent to a peripheral surface of said package for imparting primary traversing motions to said strands as they are being wound on said package whereby said strands progress and regress to define a series of bights, and means for imparting a secondary traversing motion to the strands relative to the package to advance the series of bights across the peripheral surface of the package, the improvement comprising: said traversing mechanism comprising a first series of cam members and a second series of cam members, mounting means for supporting said cam members in fixed relative positions for rotation about the axis of rotation of said traversing mechanism, each of said cam member lying in a plane containing the axis of rotation of rotation of said traversing mechanism, each of said cam members having an outwardly facing convex surface extending in a direction parallel to the axis of rotation of said traversing mechanism for engaging the strands, said convex surfaces of said first series facing in a first direction and said convex surfaces of said second series facing in a second direction opposing said first direction with said convex



surfaces for succesisve cam members of said cam members of both of said series being progressively displaced relative to said convex surfaces of preceding cam members of said cam members in a direction parallel to the axis of rotation of said traversing mechanism whereby the first series of cam members move the strands in said first direction and the second series of cam members move said strands in said second direction while maintaining the strands in a split relationship for the major portion of their movement and bringing said strands together at spaced intervals.

3,861,609

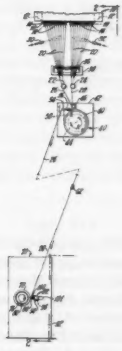
METHOD OF AND APPARATUS FOR PROCESSING LINEAR ELEMENTS

Jerome P. Klink; Alex P. Symborski, both of Granville, and Norman R. Shape, Columbus, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 206,008, Dec. 8, 1971, Pat. No. 3,771,324. This application Oct. 4, 1973, Ser. No. 403,578

Int. Cl. B65h *59/38*

U.S. Cl. 242—45 **2 Claims**



1. Apparatus for processing linear material into a wound package comprising:

rotary means for linearly feeding the linear material;

means for collecting the fed material, such means including a rotatable collector for collecting the fed material into a wound package;

control means for supplying a control signal having a patterned rate of change effective to modify the rotational speed of the collector to cause the linear rate of collection of the material to approach in general the linear rate of feed of the material during package build-up on the collector and for supplying a control signal having a patterned rate of change effective to modify the rotational speed of the rotary means to cause the linear rate of feed of the material to approach in general the linear rate of collection of the material during package build-up on the collector, the control means including switching means for selecting between the two control signals; means for sensing the differences between the speeds of the rotary feeding means and the collector of the collecting means; and

means effective in response to the sensed differences between the speeds to change the patterned rate of the selected control signal to bring the linear speeds of the rotary means and the collecting means into conformity.

3,861,610

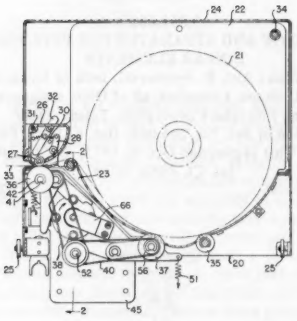
INTERMITTENT DRIVE MECHANISM

Donald E. Landis, and Floyd G. Speraw, both of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 3, 1972, Ser. No. 240,363

Int. Cl. B65h *75/02*

U.S. Cl. 242—55 **10 Claims**



1. A drive mechanism comprising:

a. a rotatably mounted support member;

b. a plurality of spaced apart drive members circumferentially mounted on said support member;

c. an actuating member rotatably mounted for movement between an operative and inoperative position, said actuating member positioned adjacent the path of movement of said drive members;

d. means for normally rotating said actuating member into engagement with one of said drive members;

e. and means for sequentially rotating said support member a predetermined distance to move the drive members through an operative and inoperative position whereby the actuating member is moved through an operative and inoperative position by said drive members.

3,861,611

ENDLESS TAPE CASSETTE

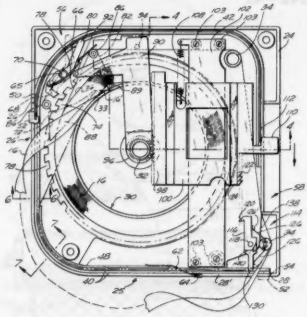
Hanjiro Esashi, Sendai, and Tadamasa Takeshi, Shichigahama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 14, 1972, Ser. No. 289,110

Claims priority, application Japan, Sept. 17, 1971, 46-84529[U]; Sept. 21, 1971, 46-85993[U]; Dec. 21, 1971, 46-121041[U]

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A **32 Claims**



1. A cartridge for an endless tape comprising a housing and a reel for said endless tape rotatably mounted therein, said housing including a peripheral side wall having at least one aperture therein through which a portion of said endless tape extends during use of the cartridge, means for selectively opening and closing said aperture, and a flexible strip of plastic material mounted at one end on said side wall adjacent said aperture for biasing said tape outwardly when said aperture is opened.

3,861,612

AUTOMATIC PAPER SPLICER

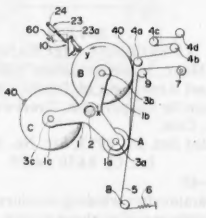
Hagemu Kubo, Osaka, Japan, assignor to Hamada Printing Press Mfg. Co., Ltd., Osaka-shi, Osaka-fu, Japan

Filed June 23, 1972, Ser. No. 265,511

Claims priority, application Japan, Sept. 18, 1971, 46-72662; June 24, 1971, 46-54992; Nov. 11, 1971, 46-105610

Int. Cl. B65h *19/14*

U.S. Cl. 242—58.3 **8 Claims**



8. An automatic paper splicer which comprises a reel carrying a plurality of rolls of paper freely rotatably mounted thereon, each of said paper rolls having the outermost layer of paper applied with adhesive material along the end extremity thereof which is in turn covered with a nonadhesive tape having an elastic member placed thereon so as to project outwardly of the peripheral surface of said paper roll, means for intermittently rotating said reel about its own axis of rotation thereby permitting any one of said paper rolls to be brought to an operative position, means for drawing the web of paper out from the paper roll in said operative position and

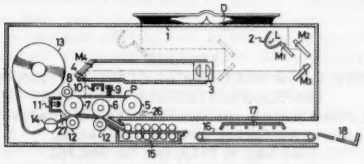
for feeding the web of paper to utilization means, said rotating means being operated in response to reduction of the diameter of the paper roll being drawn by said drawing means thereby to replace it with the succeeding one of said paper rolls, a splicer head disposed adjacent to the periphery of said succeeding one of said paper rolls, said splicer head including a housing, means for selectively moving said housing between an engaged position proximate to the periphery of the succeeding roll and a disengaged position away from the periphery of the succeeding roll, said housing carrying at least one hook member for engaging the elastic member carried on the paper roll when the housing is in the engaged position, and switch means responsive to the engagement of the elastic member by the hook member for causing said means for moving said housing to move said housing to the disengaged position, whereby said tape on the adhesive material coated on the outermost layer of paper of said succeeding paper roll is removed by the engagement between said hook member and said elastic member thereby to permit a leading portion of said outermost layer of paper of said succeeding paper roll to adhere to a trailing portion of the innermost layer of paper of the paper roll in the operative position so that a continuous web feed is ensured.

3,861,613

APPARATUS FOR OPERATING CASSETTE OF PHOTOSENSITIVE ELEMENT IN ELECTROPHOTOGRAPHIC COPIER

Susumu Tanaka, Sakai; Yuji Enoguchi, Higashi-Osaka, and Takao Fujiwara, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 27, 1973, Ser. No. 345,381
Claims priority, application Japan, Apr. 13, 1972, 47-37535
Int. Cl. B65h *17/02*; **G03g** *15/00*
U.S. Cl. 242—67.3 R **10 Claims**



1. An apparatus for operating an image transfer element cassette in an electrophotographic copier of the image transfer type comprising:

a loading station for the image transfer element cassette,

coupling means engageable with a stock shaft and a take-up shaft when the cassette is loaded in place, the stock shaft and the take-up shaft being rotatably supported in a stock roller and a take-up roller rotatably supported on a frame of the cassette, the coupling means being operable to engage with the stock roller and the take-up roller individually selectively and to thereby couple each of the rollers with the shaft housed therein for conjoint rotation, tension means engageable with and disengageable from the stock roller and the take-up roller to bias the two rollers in directions opposite to each other when in engagement therewith and to thereby tension the photosensitive element extending between the rollers,

drive means engageable with and disengageable from the coupling means engageable with the take-up shaft to selectively engage with the take-up roller, the drive means being operable to drive the take-up shaft and the take-up roller in sequence when in engagement with the coupling means and to thereby wind up the photosensitive element and pull out the same from the stock roller, and

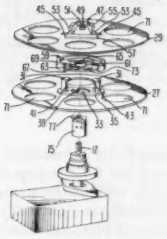
means for moving the tension means into engagement with and out of engagement from the stock roller and the take-up roller and means for moving the coupling means into engagement with the stock roller and the take-up roller selectively.

3,861,614

DEMOUNTABLE RIBBON REEL

Anthony Horak, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 17, 1973, Ser. No. 398,189
Int. Cl. B65h *75/18*
U.S. Cl. 242—71.8 **14 Claims**



1. A reel for windably holding a roll of material and wherein the material may be conveniently installed therein and removed therefrom, said reel comprising:

a. a pair of separatable spaced-apart flanges at least a first of which is provided with a central aperture serving as an axis of rotation for said reel and also as engaging means relative to a material utilizing device,

b. first means associated with said first flange for holding a spool in fixed angular relationship relative to and intermediate said flanges and for windably activating a second of said flanges in response to the windable activation of said first flange by said material utilizing device, said first means including a pair of cylindrical anchor posts fixed to said first flange and a pair of circular apertures formed in said second flange, and

c. second means associated with said second flange and engageably cooperating with said first means to securably hold said spool between said flanges such that said spool defines said spaced-apart relationship therebetween, said second means including a pair of rectilinear recesses formed in said pair of cylindrical anchor posts and resilient latching means operatively coupled to said second flange, said resilient latching means being manually manipulatable to disengage said second flange from said first flange to thereby effectuate removal or installation of said spool, the installation of a said spool being for the purpose of utilizing the material wound therearound and the removal of a said spool being for the purpose of disposing of the utilized material collected therearound.

3,861,615

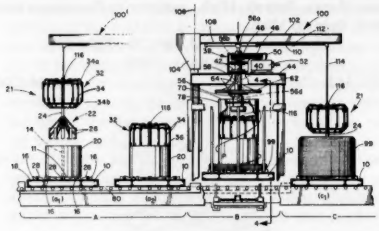
COIL FORMING AND PACKAGING

Roger Kinnicutt, Jr., Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Continuation of Ser. No. 134,179, April 15, 1971, abandoned.
This application July 2, 1973, Ser. No. 375,373
Int. Cl. B21c *47/10*
U.S. Cl. 242—82 **8 Claims**

2. Apparatus for coiling a longitudinally moving product length comprising: laying means spaced vertically above platform means, said laying means having a curved laying pipe for receiving the product length, means for rotating said laying pipe to form the product length into a succession of rings which descend under the influence of gravity to accumulate in coil form on said platform means, said laying means being further provided with a circular guide member located within

the circular path travelled by the exit end of said rotatable laying pipe, and circular guide means extending vertically between and in removable engagement at its upper and lower ends respectively with said circular guide member and said platform means, the external diameters of said guide member



and said guide means being substantially equal, thereby providing a continuous guide for the rings descending from said laying means towards said platform means, the said guide means serving additionally as a circular core about which the rings accumulate on said platform means.

3,861,616

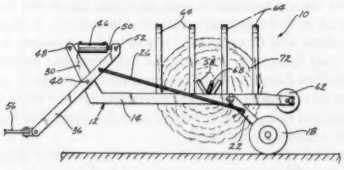
BALE TRANSPORTING AND UNROLLING DEVICE

Gail S. Dubberke, Rte. No. 4, Osceola, Iowa 50213

Filed Nov. 12, 1973, Ser. No. 414,677

Int. Cl. B65h *75/40*

U.S. Cl. 242—86.5 R **9 Claims**



1. A bale transporting device, comprising,

a wheeled frame means having rearward and forward ends, means on the forward end of said wheeled frame means for connection to a prime mover,

means on said frame means for raising and lowering said frame means relative to the ground,

the rearward end of said frame means being open to permit said frame means to be moved rearwardly with respect to a ground supported bale so that said frame means extends around said bale,

an elongated support means for engaging and supporting said bale,

and means on said frame means for engaging the opposite ends of said elongated support means whereby upward movement of said frame means will cause said bale to be raised from the ground.

3,861,617

BOBBIN SELECTABLE TO VARY LOWER THREAD TENSION

Donald R. Davidson, Parsippany, and Edmund B. Wilson, III, Dover, both of N.J., assignors to The Singer Company, New York, N.Y.

Division of Ser. No. 163,840, July 19, 1971, Pat. No. 3,702,102. This application Aug. 11, 1972, Ser. No. 280,021

Int. Cl. B65h *75/14*

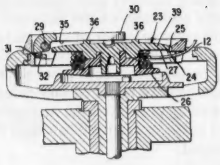
U.S. Cl. 242—118.4 **1 Claim**

1. A bobbin for use in a lock-stitch sewing machine wherein bobbin thread tension is achieved by frictionally resisting bobbin rotation said bobbin having:

a. a pair of circular flanges between which thread is adapted to be wound,

b. a circular hub on which thread is adapted to be wound separating said flanges, at least a dimetrical cross-sectional portion of said hub between said flanges being solid and concentric to the bobbin axis of rotation and to said flanges,

c. at least one raised annular protuberance formed on one of said pair of flanges concentric to the bobbin axis of rotation,



d. two different annular friction surfaces formed one on each side of said one of said pair of bobbin flanges between which friction surfaces a normal force may be applied to generate frictional resistance to rotation of said bobbin, one of said annular friction surfaces being carried on said raised annular protuberance and the other of said annular friction surfaces extending radially outward beyond the radius of the other of said pair of bobbin flanges, whereby said other of said annular friction surfaces supports said bobbin for rotation in said lockstitch sewing machine.

3,861,618

DEVICE FOR MECHANICAL STABILIZATION OF TENSILE-PRESTRESSED WINDINGS

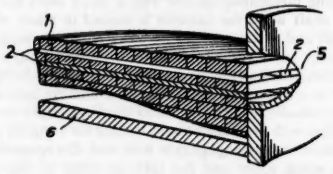
Finn Lennart Jonsson, and Sten Trolle, both of Ystad, Sweden, assignors to AB Carbox, Dragongatan, Sweden

Filed Aug. 9, 1973, Ser. No. 386,952

Claims priority, application Sweden, Aug. 30, 1972, 11223/72

Int. Cl. B65h *55/00*

U.S. Cl. 242—159 **3 Claims**



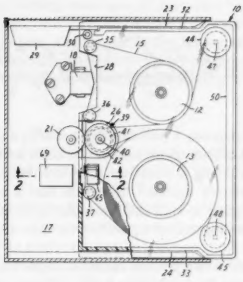
1. In combination with a member having a winding thereabout made up of a plurality of layers of a tensile prestressed elongated winding member which runs generally continuously in the winding direction, the improvement which comprises a plurality of support elements disposed between adjacent layers of winding extending generally across the winding direction, wherein the support elements comprise bands spaced at substantially regular intervals in the winding direction, and wherein all bands between adjacent layers of winding are positioned in different radial planes from the bands between the next preceding adjacent layers of winding.

3,861,619

MAGNETIC TAPE POSITION SENSING

Robert E. Wolff, Edina, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 2, 1972, Ser. No. 303,096
Int. Cl. B65h *59/38*; G03b *1/04*; G11b *1/52*
U.S. Cl. 242—188 3 Claims



1. A magnetic tape recording and/or reproducing system comprising:

a cartridge shell defining an enclosure,

a pair of reel hubs supported within said enclosure,

a length of magnetic tape extending along a tape path within said enclosure and having its ends wound one on each of said reel hubs, said length of magnetic tape being formed adjacent each end with a repetitive pattern of holes, said patterns of holes at the two ends of said tape being different to distinguish the ends of the tape from each other, and said length of magnetic tape being formed with two additional sets of holes more centrally of said length of tape than and distinguishable from said repetitive patterns, one said additional set of holes being associated with each end of said length of tape, said additional sets of holes together demarking the ends of the desired recording area on said length of magnetic tape,

means for moving said magnetic tape along said tape path from one of said reels and onto the other,

a magnetic transducer for recording and/or reproducing magnetic signals on said magnetic tape as it is moved along said tape path, and

means for detecting said holes in said magnetic tape and for distinguishing said patterns from each other and from said additional sets of holes to distinguish the ends of said length of tape from each other and from the desired recording area.

3,861,620

ONE STEP REWINDING SYSTEM FOR MAGNETIC TAPE RECORDERS AND REPRODUCERS

Sanji Sekiguchi, Sakado, Japan, assignor to Tokyo Denshi Kabushiki Kaisha, Saitama Prefecture, Japan

Filed Jan. 2, 1973, Ser. No. 320,194
Claims priority, application Japan, June 30, 1972, 47-65028
Int. Cl. G11b *15/44*, *15/30*
U.S. Cl. 242—189 6 Claims

1. An apparatus for the automatic rewinding of a tape recorder and reproducer tape after complete unwinding of the tape, and for the automatic termination of the rewinding operation after complete rewinding of the tape, said apparatus comprising:

a rewind drum from which the tape is unwound during a recording or reproducing operation and onto which tape is wound during the rewinding operation,

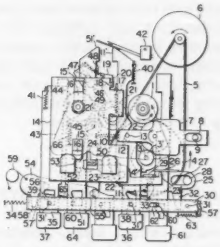
a take-up reel onto which the tape is wound as it is unwound from the rewind drum and from which the tape is unwound as it wound onto the rewind drum.

a flywheel for transmitting power from a motor to said take-up reel and said rewind drum, a cam on said flywheel,

a releasing lever, a projection on said releasing lever, said releasing lever being engageable with said cam of said flywheel,

recording and reproducing control arms, the actuation of either of said arms effecting an unwinding of said tape from said rewind drum, means for locking each of said arms in an actuated position, said locking means being engageable with said projection on said releasing lever for releasing said locking means to return either one of said arms which is actuated to a non-actuated position,

a detecting lever, said detecting lever being pivoted by the tape, after complete unwinding of the tape from the rewind drum, into engagement with said releasing lever, whereby upon pivoting of the detecting lever by the tape, said detecting lever engages said releasing lever and



moves said releasing lever into engagement with said cam of said flywheel and the locking means of each of the arms is released by engagement thereof with said projection of said releasing lever,

a relay lever, a relay pulley on said relay lever, said relay pulley drivingly connecting said flywheel and said rewind drum during tape rewinding onto said rewind drum,

a rewind arm, means for locking said rewind arm in an actuated position, said rewind arm being adapted to be actuated substantially simultaneously with the actuation of either one of the unwinding arms, and

said relay pulley being movable in response to the difference in circumferential speed arising between the input from the flywheel and the output to the rewind drum after the rewind drum has stopped rotation with the rewound tape thereon for releasing the locking means of the rewind arm to return said rewind arm to a non-actuated position.

3,861,621

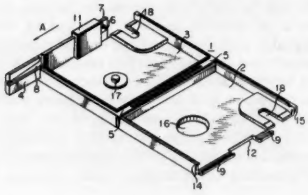
FILM CARTRIDGE FOR MOTION PICTURE PROJECTOR

Morio Takeichi, Inazawa, and Takashi Ishigaki, Nagoya, both of Japan, assignors to Elmo Company Limited, Mizuho-ku, Nagoya, Aichi Prefecture, Japan

Division of Ser. No. 181,959, Sept. 20, 1971, Pat. No. 3,756,705. This application Feb. 8, 1973, Ser. No. 330,652
Claims priority, application Japan, Oct. 2, 1970, 45-97339[U]; Oct. 2, 1970, 45-97340[U]
Int. Cl. G11b *23/10*, *15/66*
U.S. Cl. 242—197 9 Claims

1. A film cartridge adapted to contain a film supply reel with a trailing end of a film secured thereto, and a film take-up core with the leading end of the film secured thereto, and take-up core being separable from the cartridge along with the film leading end, said cartridge having open and closed positions and, comprising: a housing comprised of two half sections pivotally coupled at ends thereof, one section having an opening therein, said other section being provided on an inner surface, at a portion corresponding in position to said opening

in said one section, with a support, said support being adapted for supporting said reel so that at least a portion of a spindle hole of said reel appears in said opening, at least one of said two sections having a recess for detachably retaining said take-up core, and a movable member, said movable member extending between free ends of said two sections, said mov-



able member and said two sections having cooperating means thereon for maintaining said cartridge in a closed position, said movable member being separable from at least one of said sections to permit opening of said cartridge, said movable member covering said recess to retain said take-up core therein and being movable to uncover said recess for removal of said take-up core from said recess.

3,861,622

MAGNETIC TAPE DRIVE SYSTEM

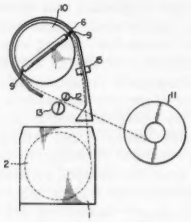
Noboru Wakami, Hirakata; Toshiomi Yabu, Kyoto, and Hiroo Hosono, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed Nov. 9, 1973, Ser. No. 414,213

Claims priority, application Japan, Nov. 20, 1972, 47-116950

Int. Cl. B65h *59/38;* **G03b** *1/04;* **G11b** *155/06*

U.S. Cl. 242—188 **5 Claims**



1. A magnetic tape drive system comprising;

a tape consisting of a magnetic tape provided at the leading end with a transparent leader tape and at the trailing end with a transparent trailer tape;

a take-up means for taking up said tape on a take-up reel through a predetermined tape path from a supply reel on which said tape is wound;

a rewinding means for rewinding said tape on said supply reel;

a detecting means provided in said predetermined tape path for discriminating the transparent tapes from the magnetic tape;

stopping means for releasing said rewinding means; and

source voltage supplying means for supplying a source voltage to said stopping means, said source voltage supplying means including a first series circuit consisting of a first switch for driving said rewinding means when the first switch is closed, a second switch adapted to be closed upon detection of the transparent tape by said detecting means and a delay circuit.

3,861,623

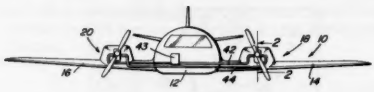
POWER TRANSFER SYSTEM IN A MULTI-ENGINE PROPELLER DRIVEN AIRCRAFT

Vernon D. Fruechte, R.F.D., Caledonia, Minn. 55921

Filed Sept. 11, 1973, Ser. No. 396,173

Int. Cl. B64d *35/00*

U.S. Cl. 244—53 R **7 Claims**



1. In combination, a pair of driven shafts, a pair of overrunning clutches mounted on said shafts each including a pair of members including a first member mounted on the corresponding shaft for rotation therewith and a second member journaled relative to said first member, each pair of members including coacting means operative to drive the second member from the first member in one direction of rotation and to allow rotation of the second member in said one direction in advance of said first member, a pair of gear type fluid pumps each including first and second gear wheel portions, said second members each comprising one gear wheel portion of a corresponding gear type fluid pump, each of said gear type fluid pumps including an inlet and an outlet, the inlet of each of said pumps being in closed communication with the outlet of the other of said pumps.

3,861,624

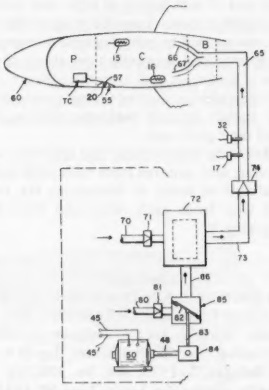
AIRCRAFT CABIN COMFORT CONTROL SYSTEM

William P. Lear, Verdi, Nev., assignor to Lear Avia Corporation, Reno, Nev.

Filed Feb. 16, 1973, Ser. No. 333,146

Int. Cl. B64d *13/08*

U.S. Cl. 244—188 R **1 Claim**



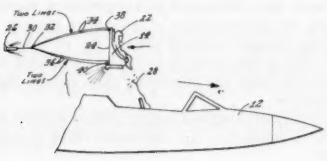
1. An automatic control system for conditioning air ducted into the cabin section of a high altitude flying plane, comprising: a heat sensor bridge that includes first and second units located in the cabin section that are responsive to the temperature therein; a third sensor unit attached to a portion of the fuselage skin that is directly responsive to the temperature of the very cold air outside of the plane and is substantially insulated from cabin temperature; control means responsive to the electrical output of said sensor bridge and of said third sensor unit, said control means including a reversible motor-actuator operable in accordance with a preset temperature condition for the ducted air; and heat exchange means respon-

sive to the operation of said motor-actuator to effect and substantially maintain the air at said preset temperature in the cabin section during flight; said third sensor unit being circuitally connected in said bridge in a manner to anticipate inside air control action for said motor-actuator in accordance with outside air temperature change, said heat exchange means including first ducting for engine hot bleed air, a cross-counterflow heat exchanger coupled with said first ducting, second ducting routing cold ram air into said heat exchanger, a damper in the second ducting for controlling the rate of ram air flow into the heat exchanger under control of said motor-actuator, and third ducting coupling the heat exchanger output as conditioned air to the cabin section.

3,861,625
EJECTED PILOT STABILIZING, RETARDING, SEPARATING AND PARACHUTE DEPLOYMENT SUB-SYSTEM

Robert F. Sadler, Phoenix, and Harold G. Watson, Scottsdale, both of Ariz., assignors to Universal Propulsion Co., Tempe, Ariz.

Filed Apr. 2, 1971, Ser. No. 130,594
Int. Cl. B64d *25/10*
U.S. Cl. 244—122 AB **12 Claims**



1. In a system for ejecting from an aircraft a pilot with his parachute pack and a seat releasably occupied by him in the aircraft where said system includes means to catapult the seat and pilot upwardly and outwardly through an opening in a fuselage in the aircraft, a subsystem initially to stabilize and decelerate the seat and the pilot and after a predetermined interval to effect separation of the seat and pilot and the opening of parachutes from a chute pack on the pilot, said subsystem comprising:

A. a tractor rocket, said rocket

i. being disposed in association with the seat in the aircraft for removal from the seat and actuation from the seat in a direction opposite to the direction of movement of the aircraft, the tractor rocket being disposed in a relationship substantially perpendicular to the catapult means during the operation of the tractor rocket and having a major component in a horizontal direction during the operation of the tractor rocket;

ii. when removed with the seat from the aircraft and actuated, developing a predetermined quantum of thrust in a direction opposite to the direction in which the aircraft is moving;

iii. developing a spin relative to the pilot and the seat for gyroscopic control; and

iv. having a trailing element terminating in a swivel device constructed rotatably to receive the ends of a plurality of flexible lines and to develop the spin for gyroscopic control;

B. a multipoint bridle arrangement, said arrangement comprising at least three flexible lines, each of said lines extending between

i. a preselected releasable connection disposed on a particular one of the seat and the chute pack and spaced from the other connections of the flexible lines with at least two of said connections being disposed at different elevations, and

ii. the said swivel device;

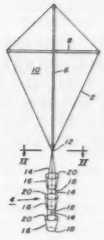
C. triggering means to actuate the tractor rocket after the seat and the pilot have been catapulted upwardly and outwardly through said opening in the aircraft fuselage; and

D. means responsive to the actuation of the tractor rocket to provide the release of the pilot from the seat after the actuation of the tractor rocket and thereafter deploying the parachute from the pilot's chute pack.

3,861,626
TAIL FOR A KITE

William H. Hufstader, 5700 Bunker Hill St., Pittsburgh, Pa. 15206

Filed Aug. 29, 1973, Ser. No. 392,478
Int. Cl. B64c *31/06*
U.S. Cl. 244—153 R **6 Claims**



1. A tail for a kite, which tail is to be attached to a point on the kite which is adjacent the lowest point of the kite when in use, comprising:

a plurality of open-ended, hollow, frusto-conical members; and

a plurality of cords securing the frusto-conical members in spaced alignment below the point of attachment to the kite, so that the smaller end of each frusto-conical member is disposed away from the kite, and the frusto-conical members are disposed about a common axis which intersects the point of attachment to the kite,

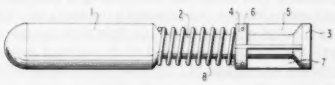
with the uppermost frusto-conical member being secured by a plurality of cords, which cords are attached to the kite at the point of attachment, and also secured to the uppermost frusto-conical member, and

each lower frusto-conical member being secured by a plurality of cords, which cords are secured to that lower frusto-conical member, and are also secured to the frusto-conical member above that lower frusto-conical member.

3,861,627
FOLDABLE CONTROL FLAP UNIT, ESPECIALLY FOR ROCKETS

Rainer Schoffl, Bergisch Gladbach, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

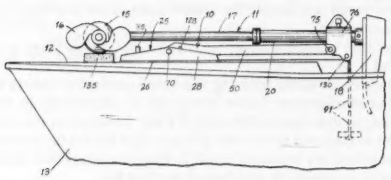
Filed Dec. 28, 1973, Ser. No. 429,271
Claims priority, application Germany, Dec. 30, 1972, 2264338
Int. Cl. F42b *13/32*
U.S. Cl. 244—3.27 **17 Claims**



1. Foldable control flap unit, especially for rockets, comprising a plurality of control flap members, connecting means

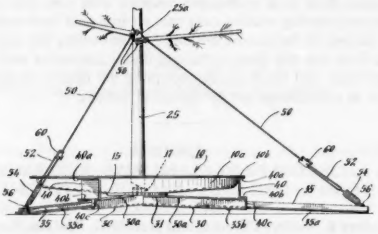
disposed on a rocket for hingedly connecting said flap members for movement from a substantially folded closed position to an unfolded open position, said flap members having a first inclined surface portion, and counterpart means having a second correspondingly inclined surface portion, at least one of said connecting means and said counterpart means being responsive to axial force for synchronously unfolding said flap members by causing said first and second inclined surface portions to slidingly engage with a consequent unfolding of said flap members, said connecting means including a ring member mounted for axial movement along a portion of the rocket from a first position to a second position in the rearward direction of the rocket, said flap members being hingedly connected thereto, said counterpart means being a fixedly disposed rigid member at a rearward portion of the rocket, and said ring member being responsive to axial force in the rearward direction for causing said first inclined surface portion to slidingly engage said second inclined surface portion.

3,861,628
FOLDING ACCESSORY BRACKET ASSEMBLY
George H. Krieger, St. Louis, Mo., assignor to St. Louis Die-casting Corporation, Bridgeton, Mo.
Filed Sept. 6, 1973, Ser. No. 394,782
Int. Cl. F16m *1/02*
U.S. Cl. 248—4 **13 Claims**



1. A bracket assembly for mounting a trolling motor assembly to the deck of a boat, the motor assembly including a motor adapted to depend in the water by means of a shaft, the motor being mounted at the lower end of the shaft, and for moving the trolling motor assembly between an extended position with its shaft generally perpendicular to the surface of the water and a retracted position with its shaft generally parallel to and on top of the deck of the boat, the bracket assembly comprising mounting means for mounting to the boat deck, a motor bracket for mounting around the shaft of the motor assembly, first arm means pivotally connected at a first end to the motor bracket and pivotally connected at a second end to the mounting means, second arm means pivotally connected at a first end to the motor bracket, the pivotal axis of the first and second arm means at the motor bracket being spaced apart, means connected to the mounting means for pivotally and slideably connecting a second end of the second arm means to the mounting means, and means responsive to pivotal movement of the first arm means to slide the pivotal axis at the second end of the second arm means, the dimensions of the arm means and the locations of the pivotal axes being such as to control the attitude of the motor assembly shaft to be generally perpendicular to the surface of the water in the extended position and to be generally parallel to and on top of the deck of the boat in the retracted position.

3,861,629
TREE STAND
Walter B. Merrill, 103 Salem Rd., New Canaan, Conn. 06840
Filed May 23, 1973, Ser. No. 363,042
Int. Cl. A47g *33/12*
U.S. Cl. 248—44 **3 Claims**



1. A multi-part support assembly for an article which includes a vertical shaft, which assembly comprises:

A. a saucer-like part having means for engaging and holding against lateral motion the lower extremity of the articles shaft;

B. at least three elongated socket-providing members engaging the under surface of the saucer-like part and extending radially outward toward the periphery of that part, said members being angularly distributed about the saucer-like part and presenting open ends at their outer extremities;

C. a plurality of elongated supplementary support members equal in number to the socket-providing members and sized

1. to enter the socket-providing members through their open ends and become engaged therein and
2. to extend outwardly beyond the outer extremities of the socket-providing members, and

D. tension means engageable with the outer extremities of each of the several supplementary support members for connecting those extremities with the shaft to be supported at a region above the level of the saucer-like part;

E. each of the socket-providing members

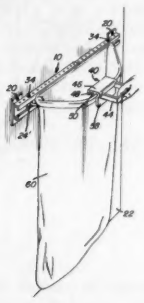
1. being inclined slightly downwardly from the innermost region of its engagement with the saucer-like part towards its outermost extremity;
2. being provided near and above its open end with a fulcrum surface which exerts a localized hold-down force on the supplementary support member engaged within that socket-providing member; and
3. having in its bottom floor one or more depressions significantly spaced from its open end; and

F. each of the supplementary members having near the end intended for entry into the socket-providing member a downward protrusion adapted to fit within any of the said depressions in the socket-providing members, whereby the weight impressed by the saucer-like part on each supplementary support member tends to rotate that member about the associated fulcrum surface and thus to lock the member's protrusion into the appropriate depression.

3,861,630
BAG HOLDER
Larry D. Ady, Ozark, Ala., assignor to Superior Products, Macon, Ga.
Filed July 2, 1973, Ser. No. 375,367
Int. Cl. B65b *67/04*
U.S. Cl. 248—100 **8 Claims**

1. A bag support including an elongated mounting bar for mounting in generally horizontal position, a pair of support fixtures supported from said bar at points spaced longitudinally therealong and adapted to have the upper corners of a

bag supportingly engaged therewith, elastic loop means for disposition about the upper end portion of said bag and over which the upper end marginal portions of the bag may be folded, a stiff but somewhat flexible elongated sleeve disposed about one side portion of said loop means, a horizontally elongated handle removably laterally engageable with said sleeve for support of the latter from said handle, said handle



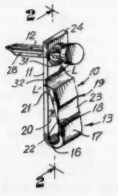
being of a length appreciably less than the length of said sleeve whereby the opposite ends of the sleeve project endwise outwardly of the opposite ends of said handle when the latter is engaged with said sleeve, said handle including means for laterally releasably engaging said bar intermediate said support fixtures for support of said handle, and thus said sleeve, from said bar.

3,861,631

HANGER DEVICE FOR ATTACHMENT TO WALLS

Joseph E. Shorin, New York, N.Y., assignor to Aggogle Inc., New York, N.Y.

Filed Sept. 4, 1973, Ser. No. 393,903
Int. Cl. A47f *7/14*
U.S. Cl. 248—218 **5 Claims**



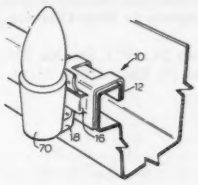
1. An integral picture hanger formed of molded polymeric material comprising a body portion including a hook portion forming a downward continuation of said body portion, an integral hanger nail member extending transversely through said body portion, said nail being joined to said body by weakened connector web portions extending between peripheral portions of said nail and said body portion, said connector web portions including a reduced thickness rupture zone spaced from the periphery of said nail adapted to be fractured responsive to the application of hammer blows to the head of said nail, portions of said connector web between the periphery of said nail and said rupture zone being of greater thickness than and remaining connected to and forming barbs extending from the shank of said nail following nail to the nail receiving surface, said nail including a head at the hook side of said body portion, an elongated shank, and a pointed tip to the opposite side of said body portion from said head.

3,861,632

COMBINED LIGHT SOCKET AND MOUNTING BRACKET

Lembit Siilats, 37 Bingham Ave., Toronto, Ontario, Canada

Filed May 8, 1973, Ser. No. 358,397
Int. Cl. A47g *33/16*; **F21p** *1/42*
U.S. Cl. 248—223 **4 Claims**



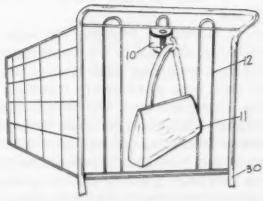
1. A mounting bracket means for use in combination with a lamp socket, to permit one-handed securing of the bracket means in substantially permanent attached relation to a support structure such as a roof guttering having a projecting rib portion, and providing a stable mount to receive a said lamp socket in one-handed mounted relation thereon, comprising:
a bracket body portion having an inward facing surface to fit in abutting relation against a said support structure:
at least one deformable lip portion extending from said body portion for deforming into gripping relation with said support rib portion by unassisted manual deformation, to secure said inner surface in said abutting relation to said support structure; and clip means of struck-out section projecting outwardly from an intermediate portion of said body portion, having outer surfaces of said body portion in adjacent bounding relation therewith, and offset from said clip means to provide a socket stabilizing surface on each side of said clip means, said clip means receiving a tongue portion of a said lamp socket in inserted relation therein to secure said tongue portion in resiliently secured relation against said body portion outer surfaces, to permit one-handed secured attachment thereto.

3,861,633

GROCERY CART HOOK

Ned E. Rappleye, and June A. Rappleye, both of 4714 Richardson, Idaho 83705

Filed Sept. 12, 1973, Ser. No. 396,591
Int. Cl. F16b *45/02*
U.S. Cl. 248—227 **1 Claim**



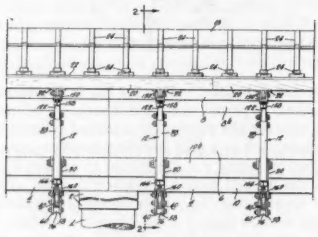
1. A hook device adaptable for mounting to the exterior side of a shopping cart on which a hook member serves as a means of hanging the strap of an attached bag, in which
the hook member is mounted to an axle rod, the axis of which is vertically oriented in the installed position to permit the hook member to rotate in the horizontal plane, together with a spring which is fastened on the axle rod so as to rotate the hook member to one side and under the side of an attached bracket plate, said bracket plate being shaped so as to permit the end of the hook member to rise above the bracket plate when the hook member is rotated

manually so as to lie in a plane perpendicular to the side of the attached cart.

3,861,634
ADJUSTABLE OVERHANG CONSTRUCTION APPARATUS

Bobby Jack Hood, Decatur, Ga., and Claude Don Hawkins, Mobile, Ala., assignors to Moss-Thornton Company, Inc., Leeds, Ala.

Filed July 31, 1972, Ser. No. 276,379
Int. Cl. E04g *17/18, 11/54*
U.S. Cl. 248—228 **26 Claims**



1. Apparatus for use in supporting structure overhanging to one side of a single support member, the support member having an upper portion and a lower portion with side flanges, comprising:

engaging means for securing the apparatus to the lower portion of the support member to support the apparatus and being out of contact with the overhang structure;

carrier means for providing a vertically movable coupling between the overhang structure and the engaging means on one side of the support member; and

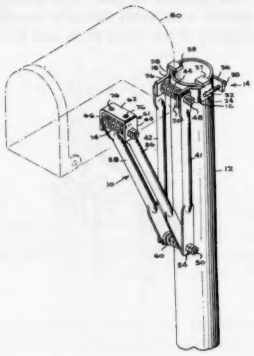
at least two adjustable members each connected at one end to the engaging means and at the other end to the carrier means for moving the carrier means to support the overhang structure in a predetermined relationship to the upper portion of the support member.

3,861,635
EXTENDABLE ADJUSTABLE MAILBOX SUPPORT MEANS

Albert L. Juris, R.D. 1, Box 344, Hazelton, Pa. 18201

Filed May 21, 1973, Ser. No. 362,325
Int. Cl. F16m *13/00*
U.S. Cl. 248—284 **8 Claims**

1. Attachment means for enabling the adjustable attachment of a mailbox or the like to a vertical support post, said attachment means comprising base bracket means connectable with said post, base pivot means mounted on said base bracket means, elongated base arm means comprising first and second parallel tubular arm members having flattened end surfaces pivotally connected on an inner end to said base bracket means by said base pivot means for pivotal movement with respect to said base bracket, arm pivot means mounted on an outer end portion of said base arm means spaced from the pivotal connection of said base arm means to said base pivot means, outer arm means pivotally connected on one end to said arm pivot means, a connecting bracket including means enabling connection to a mailbox or the like, a connecting bracket pivot means on the end of said outer arm means spaced from the pivotal connection of said outer arm means to said arm pivot means, said connecting bracket being pivotally connected to said connecting bracket pivot means and friction increasing means associated with the pivotal connection between said base arm means and said base bracket means and the pivotal connection between the outer end of said base arm means and the end of the outer arm means pivotally connected thereto and the outer end of the outer arms and the connecting bracket whereby the frictional resistance to pivotal movement of the pivotally connected



members will be sufficient to maintain said mailbox in a fixed position of adjustment absent the application of additional force to the mailbox or the attachment means.

3,861,636
SELF-LOCKING FIXING MEMBER

Leslie J. Diener, Torrens Park, Australia, assignor to Omark Australia, Ltd., Clovelly Park, Australia

Filed Sept. 20, 1973, Ser. No. 399,056
Int. Cl. B42f *13/00;* **E04g** *17/18;* **F16b** *13/06*
U.S. Cl. 248—343 **1 Claim**

1. A self-locking fixing member and bracket combination adapted to be lockably inserted into an aperture in a receiving member, said self-locking fixing member and bracket combination comprised of assembled individual parts including; a shank having one end conically tapered and the remainder of the shank being straight, a single piece substantially cylindrical ferrule with one end split longitudinally to permit expanding, and the other end having a diameter smaller than the tapered end and larger than the straight end of the shank, said ferrule slipped over the straight end of the shank and being positioned on the shank with the split end thereof abutting the tapered end of the shank, a coil spring slipped over the straight end of the shank and having one end in abutment with the ferrule opposite the split end, and a distortable one-piece spring strip having two apertured portions being contiguous with each other and being oppositely inclined with respect to each forming a lockable clip distorted to align the apertures whereby it is slipped onto the straight end of the shank, said strip being positioned on the shank in abutment with the other

end of the coil spring to anchor the coil spring which urges the split end of the ferrule onto the tapered end of the shank, and said spring strip being extended longitudinally beyond the shank opposite the tapered end and including means for engaging and supporting a component such as a suspended ceiling or the like to be interconnected to the receiving member.

3,861,637

SUSPENSION DEVICE FOR A VEHICLE SEAT AND ESPECIALLY A TRACTOR SEAT

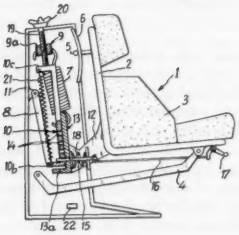
Jacques Albert Huot DeLongchamp, Paris, France, assignor to Sable Freres International, Seine-Saint-Denis, France

Filed May 25, 1973, Ser. No. 364,119

Claims priority, application France, June 13, 1972, 72.21180

Int. Cl. B60n *1/02;* **A47c** *3/30*

U.S. Cl. 248—399 **3 Claims**



1. A vehicle seat structute for an agricultural vehicle, or the like, comprising a substantially L-shaped supporting frame, a mounting frame for mounting said supporting frame on the vehicle, guiding means for directly guiding said supporting frame with respect to said mounting frame for substantially vertical movement of said supporting frame, an intermediate seat-height adjusting means movably mounted within said mounting frame, means mounting said adjusting means for vertical movement within said mounting frame, said adjusting means having a first part fixed to said supporting frame and a second part movable vertically relative to said first part, manually operable locking means for locking said first part of said adjusting means to said second part at any selected position, initial tension-adjusting means comprising an initial supporting part operatively connected to said mounting frame and an initial tension adjusting part vertically movable with respect to said supporting part, manually operable control means for vertically adjusting said adjusting part with respect to said initial tension supporting part, and resilient elongated suspension means vertically located between said supporting frame and said mounting frame and having their ends attached respectively to said initial adjusting part and to said second part of said seat-height adjusting means.

3,861,638

DISPLAY STANDS FOR MODELS

Duncan Tong, Hong Kong, China, assignor to Playart Ltd., Hong Kong, China

Filed May 17, 1973, Ser. No. 361,209

Claims priority, application Great Britain, May 17, 1972, 23269/72

Int. Cl. F16m *11/00*

U.S. Cl. 248—407 **3 Claims**

1. A display stand comprising a plane first member having a semi-circular part;

a diametrally extending arm on the first member;

a peg on the end of the said arm;

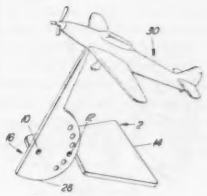
a central socket in said semi-circular part of the said first member;

and a row of other sockets equi-spaced from the said central socket;

a plane second member;

at least one straight edge on said second member;

a cut-out extending into said second member from one side, one edge of said cut-out being perpendicular to the said straight edge;



a pair of pegs extending from the said one edge of the cut-out;

the pegs being spaced at a distance equal to that between the said row of sockets and the said central socket of the first member;

whereby, the first member and the second member can be interlocked in a plurality of relative positions.

3,861,639

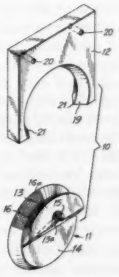
PICTURE HANGER ASSEMBLY

Alan Morrill, New York, N.Y., assignor to No-Mar Products, Inc., New York, N.Y.

Filed Sept. 26, 1973, Ser. No. 400,995

Int. Cl. A47g *1/16*

U.S. Cl. 248—489 **6 Claims**

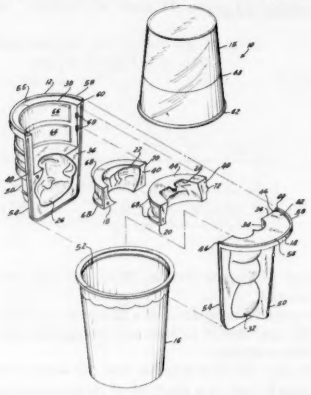


1. A hanger assembly for mounting a display frame to a reference support comprising in combination, a hanger formed of a substantially circular disc and including means for providing a mounting of the hanger support to a reference member, said hanger being formed with a base portion and an abutting portion of substantially semicircular cross-section projecting forwardly from an upper region of said base portion; and a mating member including a substantially semicircular cutaway portion defining a segment of a circle larger than semicircular to allow the mating member to be releasably locked into position with the hanger and further including means for mounting said mating member to a display frame, said hanger and said cutaway portion of said mating member being respectively formed with mating surfaces defining a segment of a circle to permit releasable mutual engagement for support of said mating member by said hanger relative pivotal displacement for centering of said display frame.

3,861,640
INTERCHANGEABLE MOLD ASSEMBLY

Nicholas J. Agneta, North Bellmore, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed May 21, 1973, Ser. No. 361,940
Int. Cl. B41b 11/62
U.S. Cl. 249—102 9 Claims



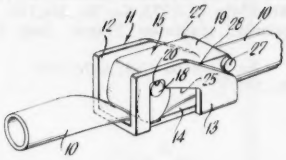
1. A mold assembly for use in making molded toy figurines from a settable liquid mold material, said assembly comprising a pair of mold halves and a plurality of interchangeable mold elements adapted to be respectively removably mounted in one of said mold halves, said mold halves and said interchangeable mold elements having cooperating mold cavities of distinct configuration defining a toy figurine mold when said mold halves are placed in juxtaposition with said cavities facing each other; the cavity of said one mold half including an integrally formed first cavity portion corresponding to a portion of the configuration of the figurine to be formed and a second cavity portion for removably and interchangeably receiving at least one of said mold elements therein, whereby a portion of the configuration of the side of the figurine formed by said one mold half may be varied by selectively interchanging the mold elements received in said second cavity portion; said second cavity portion being dimensioned to receive at least two of said interchangeable mold elements and said interchangeable mold elements defining at least two groups of mold elements, corresponding respectively to at least two body portions of the figurines to be formed, with each mold cavity in said elements having a different configuration for its respective body portion; each of said mold halves including a flat face extending outwardly from the sides and one end of their respective cavities, and an end face plate extending radially outwardly from the other end of the mold cavity, perpendicularly to said flat face, said mold halves defining an opening into their mold cavitites through said end face plate when said mold halves are placed in juxtaposition to each other, whereby said settable liquid mold material can be poured into the mold cavity to form a toy figurine.

3,861,641
METERING HOSE CLAMP

Edwin S. Kolic, 544 Knights Ave., Gahanna, Ohio 43230

Filed June 1, 1973, Ser. No. 365,964
Int. Cl. F16k 7/06
U.S. Cl. 251—9 19 Claims

1. A flow-metering hose clamp, comprising a channel frame member comprising a bottom wall and two upstanding side walls, corresponding downwardly sloping ramps on said side walls and providing a range of offsets from said bottom wall as a function of longitudinal displacement along said bottom wall, and a compression drum member having an arcuate compression surface, said drum member extending between said walls and including projecting cylindrical pivot elements at each end, said compression surface including a portion that is generally cylindrical about the axis of said pivot elements and said drum member including an actuating arm extending in essentially a single direction and generally radially of the axis of the compression surface, said arm providing at least a limited range of rotary actuation of said drum member with respect to said frame member while said pivot elements ride said ramps and while said arcuate compression surface faces

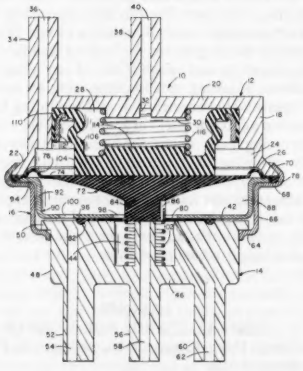


said bottom wall, whereby with a resilient hose interposed between said compression surface and said bottom wall an operation of said actuating means may cause small controlled incremental compressional displacement of said surface toward said bottom wall through rolling-contact engagement of said pivot elements with said ramps, and whereby with said arm extending in the general direction away from the downward slope of said ramps, such rolling-contact engagement inherently aids bodily displacement of said compression surface in the downward-slope direction as said arm is actuated toward the bottom wall.

3,861,642
FLUID CONTROL VALVE

Gerald E. Maddocks, Chatham, Ontario, Canada, assignor to Fram Corporation, East Providence, R.I.

Filed Feb. 5, 1973, Ser. No. 329,573
Int. Cl. F16k 31/145
U.S. Cl. 251—61.1 15 Claims



1. In a fluid control valve comprising:

a housing enclosing a volume and defining, therewithin, a pair of spaced apart chambers opening toward each other, the first of said chambers at one end of and the second of said chambers at the other end of said enclosed volume;

a first diaphragm across said first chamber and a second diaphragm across said second chamber, said diaphragms

spaced apart, connected to each other and having predetermined proportionally sized areas;

a first input passage communicating through said housing with said first chamber and spaced from said first diaphragm; and

a second input passage and a separate output passage, each communicating through said housing with said second chamber, said output passage spaced from said second diaphragm and said second input passage extending to said second diaphragm and normally closed thereby, said second input passage open with said second diaphragm moved toward said first chamber;

that improvement characterized in comprising:

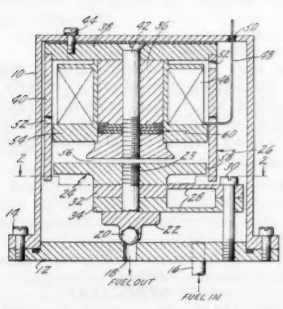
an integral elastomeric diaphragm member positioned between and closing said chambers, said diaphragm member comprising said first and second spaced apart diaphragms, each said diaphragm spanning one of said chambers and having an outer peripheral portion fixedly and sealingly secured peripherally to one of said chambers and each said diaphragm having a moveable inner portion and a flexibly thin portion about the margin thereof adjacent said outer peripheral portion, said flexibly thin portion marginally defining said moveable inner portion and integrally connecting said inner and outer portions and said moveable inner portion moveable toward and away from said chambers, and said diaphragm member also comprising a connector post extending between and integrally connected to and connecting said diaphragms on the adjacent sides thereof, said post extending transversely across each said diaphragm moveable inner portion from inwardly adjacent said flexibly thin portion, said post thickening and rigidifying said moveable inner portion inwardly adjacent said flexibly thin portion, said control valve further including a vent passage communicating through said housing with a third chamber defined within said housing by said housing and the space between said diaphragms and further including a bleed passage extending through said diaphragm member from said second chamber to said third chamber at a position spaced from said second input passage.

3,861,643

SATURATING MAGNETIC CONTROL VALVE

Elbert M. Moffatt, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 5, 1973, Ser. No. 404,085
Int. Cl. F16k *31/06*
U.S. Cl. 251—129 **6 Claims**



1. A control valve comprising

an electromagnet including a solenoid and a core member of magnetic material, at least a portion of said core member being positioned axially within said solenoid,

an armature comprising a disk of magnetic material spaced from said core member by a gap and adapted for movement relative to said core member by virtue of an actuating force produced by said electromagnet in response to the flow of electric current in said solenoid,

a valve member extending axially from the center of said armature and movable therewith along the axis of said solenoid, said valve member being adapted to regulate a variable in a process in response to movement thereof,

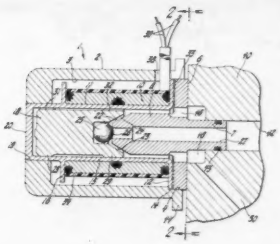
and flexure means comprising first and second thin, narrow rods extending radially from said valve member and secured at the opposite ends thereof, said first and second rods being in the same plane and being 90° removed from each other about the axis of said solenoid, said rods constraining movement of said valve member to a direction along the axis of said solenoid.

3,861,644

SOLENOID VALVE

Richard S. Knape, Grand Rapids, Mich., assignor to General Motors Corp., Detroit, Mich.

Filed Oct. 9, 1973, Ser. No. 404,255
Int. Cl. F16k *31/06*
U.S. Cl. 251—139 **3 Claims**



1. An electromagnetic valve device comprising, in combination, a housing; a pole piece abutting the housing including a first hollow boss extending into the housing and a second hollow boss extending from the housing; an annular bobbin fixed in the housing; a solenoid on the bobbin; an armature reciprocably guided within the bobbin, the armature and the first boss having confronting portions defining an air gap; means providing a fluid seal between the bobbin and the pole piece; the housing, pole piece, and armature being of a magnetic material and the bobbin being non-magnetic; the bosses defining a fluid inlet passage terminating in an annular seat at the inner end of the first boss; and a movable valve closure member disposed adjacent the seat and biasable against the seat by energization of the solenoid; a fluid outlet passage extending along the exterior of the first boss bounded by the first boss and the bobbin; the pole piece defining an outlet from the outlet passage.

3,861,645

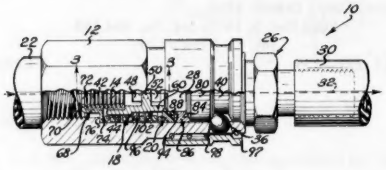
VALVED COUPLING WITH SLIDABLE SEAL RING

James F. Norton, Berea, Ohio, assignor to The Hansen Manufacturing Co., Cleveland, Ohio

Continuation of Ser. No. 286,764, Sept. 6, 1972, abandoned. This application Apr. 27, 1973, Ser. No. 355,183
Int. Cl. F16l *37/28*
U.S. Cl. 251—149.6 **15 Claims**

1. A socket assembly for receiving a plug element to connect a conduit associated with said socket assembly in fluid

communication with a conduit associated with the plug element, said socket assembly comprising a socket body adapted to be connected with a conduit and defining a centrally disposed valve chamber, a valve member disposed in said valve chamber and movable between a closed condition and an open condition enabling fluid to flow through said valve chamber, first coil spring means disposed in said valve chamber for urging said valve member toward the closed condition, seal means disposed in said valve chamber for cooperating with said valve member to block fluid flow through the valve chamber when said valve member is in the closed condition and for sealingly engaging the plug element when said valve member is in the open condition, said seal means being movable axially relative to the socket body under the influence of the plug element from a first position to a second position as the plug element is received in the socket assembly, and second coil



spring means disposed in said valve chamber in a telescopic relationship with said first coil spring means for urging said seal means to the first position, said valve member including port means for enabling fluid to flow along a path having a first portion which is disposed inwardly of the coils of said first and second coil spring means and a second portion which is disposed inwardly of the coils of said second coil spring means and outwardly of the coils of said first coil spring means without passing between adjacent coils of either of said coil spring means when said valve member is in the open condition.

3,861,646

DUAL SEALING ELEMENT VALVE FOR OIL WELL PUMPS

Bobby L. Douglas, Odessa, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 27, 1972, Ser. No. 301,557

Int. Cl. F16k 1/44

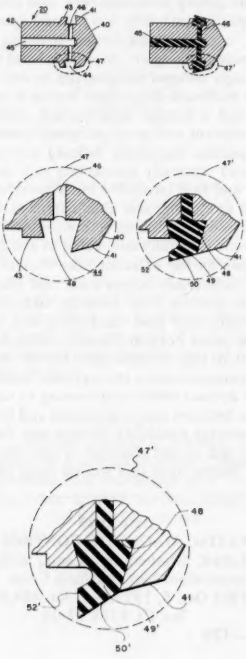
U.S. Cl. 251—356 **6 Claims**

1. A valve apparatus, comprising:

a valve body having an internal flow passageway therein, said passageway being at least partially filled with a resilient material; and

a resilient sealing surface on said body, said surface being integral with said resilient material in said passageway;

said passageway including a first channel which at least partially coincides with the central longitudinal axis of said valve body and at least one additional channel which



runs transverse to said longitudinal axis;

said valve body further comprising a dovetail channel around the circumference of said valve body and which is also filled with resilient material integral with said resilient material in said passageway, the exterior surface of said resilient material in said dovetail channel forming said resilient sealing surface.

3,861,647

JACK STRUCTURE

Fields Meredith, 515 East St., Newport, Ky. 41071

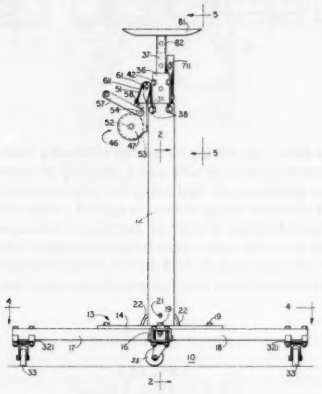
Filed Oct. 16, 1973, Ser. No. 406,776

Int. Cl. B66f 7/02

U.S. Cl. 254—4 R **4 Claims**

1. A jack which comprises an elongated hollow upright base section, an elongated tubular intermediate section mounted

for telescopic movement inside the base section, an elongated inner section mounted for telescopic movement inside the intermediate section, a first pulley means mounted on a lower end portion of the intermediate section, second pulley means mounted on an upper end portion of the intermediate section, a winch mounted on the base section, cable means extending from the winch downwardly between the base section and the intermediate section and around the first pulley means, upwardly from the first pulley means to and over the second



pulley means, and downwardly from the second pulley means to a cable anchor mounted on the inner section adjacent a lower end portion thereof, and means for turning the winch to cause raising of the inner and intermediate sections, the intermediate section and the inner section being provided with transverse alignable openings for receiving a pin to cause the inner and intermediate sections to move together, the inner section being raisable with respect to the intermediate section when the pin is removed and the winch is turned.

3,861,648
TWO-SPEED TRAILER LANDING GEAR SAFETY ARRANGEMENT

John J. Glassmeyer, Covington, Ky., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jan. 9, 1974, Ser. No. 432,014
Int. Cl. B60s 9/02; F16l 35/00
U.S. Cl. 254—86 R **12 Claims**

1. A two speed landing gear comprising:

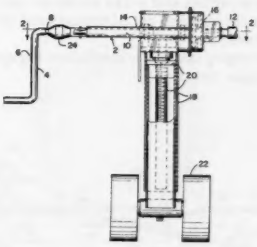
a longitudinally shiftable landing gear drive shaft for high speed and low speed manual shift and having inner and outer ends,

an outer rotatable and longitudinally reciprocable crank handle shaft for the landing gear having inner and outer ends with the inner end in longitudinal abutting relation with the outer end of the landing gear shaft,

a coupler housing disposed over the abutting inner end of the handle shaft and the outer end of the landing gear shaft for longitudinal reciprocal movement and rotational movement with respect to said abutting shaft ends,

said housing having an outer portion provided with outer and inner recesses separated by a central neutral recess, high speed and low speed shear pins mounted on the outer portion of the handle shaft and carrying high and low speed dogs for selective alternative coupling with their outer and inner recesses, and

a lost motion connection between said landing gear shaft and said coupler housing,

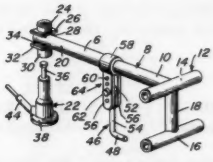


whereby axial to and fro movement of the handle shaft results in shifting of the landing gear between high speed drive and low speed drive.

3,861,649
MANHOLE COVER LIFTING DEVICE

Robert L. Mosley, 4268 S. 4300 West, Hooper, Utah 84315

Filed Jan. 15, 1974, Ser. No. 433,469
Int. Cl. B66f 3/22
U.S. Cl. 254—124 **8 Claims**



1. A manhole cover ring holddown, cover freeing and lifting device comprising: a rigid lever adapted to assume a horizontal in-use position and of a length capable of spanning and projecting beyond the outer marginal edge portions of said cover and ring, respectively, a lever fulcruming bracket fixedly mounted on one end of said lever and adapted to rest solidly atop the curb or other support surface bordering said ring, adapter means affixed to the other end of said lever, a readily applicable and removable lever actuating jack aligned, engageably and cooperable with said adapter means, a cover dislodging and lifting hook having a lower end separably but liftably connectible with said cover, and a hanger for said hook retentively but adjustably mounted on a median portion of said lever and embodying means to which the upper end of said hook can be operatively connected and by way of which it is suspended.

3,861,650
STRINGING PULLER

Richard L. Jackson, Lewisburg, Ohio, assignor to Jackson Communication Corp., Clayton, Ohio

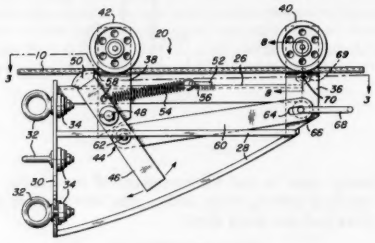
Filed Jan. 26, 1973, Ser. No. 326,834
Int. Cl. H02g 1/02
U.S. Cl. 254—134.3 R **11 Claims**

1. A stringing puller comprising:

a. a main framework,

b. means for supporting said framework from a messenger strand,

c. means for attaching a cable to said framework,
d. a towing ring for attaching a tow line to said framework,
e. brake means for engaging a messenger strand on which said framework is supported,
f. means mounting said brake means on said framework for movement into and out of engagement with said messenger strand,
g. means urging said brake means into engagement with said messenger strand,

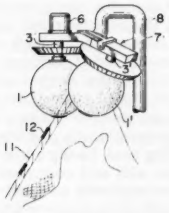


h. link means extending from said brake means to said towing ring and acting in opposition to said urging means and maintaining said brake means out of contact with said messenger strand when said puller is pulled along said messenger strand, and
i. means defining openings in said framework and one end of said link means and receiving said towing ring therein.

3,861,651
DEVICE FOR HAULING DRAGNET

Daigo Takamura, 73 Onahamakamikajiro tateshita, Iwaki, Japan

Filed Oct. 10, 1972, Ser. No. 296,081
Int. Cl. A01k 73/06
U.S. Cl. 254—137 6 Claims

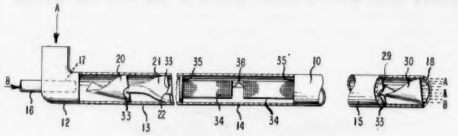


1. A device for hauling a dragnet, and comprising a pair of ball rotors having elastic surfaces for contacting and holding therebetween a dragrope which mutually depresses said elastic surfaces in the respective ball rotors thereby developing forces in said ball rotors urging said dragrope to be held therebetween so that a dragnet trailing along said dragrope is by gravity pulled under said ball rotors; a pair of generally vertical shafts to which said rotors are fixed; a housing for supporting the upper portions of said shafts in such a manner as to be free from the lower portions of said ball rotors; and a motor for driving said shafts in opposite directions to each other.

3,861,652
MIXING DEVICE

Richard Allen Clark, and John William Coryell, both of Waynesboro, Va., assignors to E. I. du Pont de Nemours and Co., Wilmington, Del.

Filed Nov. 15, 1972, Ser. No. 306,921
Int. Cl. B01f 15/02
U.S. Cl. 259—4 2 Claims

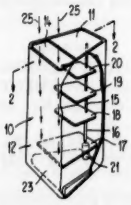


1. In a device for mixing a plurality of flowing liquids including a hollow cylindrical tube and a plurality of curved mixing elements positioned in said tube, the improvement comprising: said elements being formed in spaced groups and a cylindrical shaped screen positioned between at least two spaced groups of elements, said screen having a diameter less than the diameter of the conduit, said screen being connected to the walls of the conduit at one end and being closed at the other end.

3,861,653
PROCESSING VESSEL

Joseph Becheiraz, Marly, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 14, 1973, Ser. No. 332,379
Claims priority, application Switzerland, Feb. 14, 1972, 2099/72
Int. Cl. B01f 11/00
U.S. Cl. 259—19 10 Claims

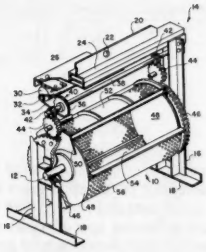


1. A processing vessel comprising a tank and agitator means disposed therein, said tank including an inlet for the introduction of photographic material into a liquid held in said tank, means defining a path of travel for said photographic material when said photographic material is introduced in said tank, said agitator means comprising agitating vane means for agitating said liquid, means for biasing said agitator means into a predetermined position within said tank, and means extending into said path of travel for deflecting said agitator means from said predetermined position upon introduction of photographic material into said tank, whereby said vane means cause agitation of said liquid.

3,861,654
DOOR OPENING AND CLOSING APPARATUS FOR TUMBLING BARREL

Albert Singleton, 7360 Brookside Pky., Middleburg Heights, Ohio 44130

Filed Nov. 28, 1973, Ser. No. 419,815
Int. Cl. B01f *9/02*
U.S. Cl. 259—89 **10 Claims**



1. A rotatable barrel for use in the surface treatment of particulate matter enclosed therein,

said barrel having ends and side structure, said ends being mechanically attached to means forming the side structure,

said side structure being foraminous,

an opening means in said foraminous side structure for the insertion and discharge of particulate matter,

said barrel being rotatable about an axis extending perpendicular to the ends of said barrel,

a door for opening and closing said opening means, said door being mounted on lever arms,

one said lever arm being spaced from each end of the barrel and extending radially from its axis of rotation, a hub means on each end of the barrel extending coaxially with said axis of rotation,

said lever arms being mechanically attached to the hub means to thereby swing the door in an arc having an axis coaxial with said hub means,

stop means for limiting the angle of said arc in which said door may swing relative to the barrel,

at least one of said lever arms being mechanically attached to a gear mounted on one side of said hub means whereby, rotation of said gear in one direction drives the door to closed position against one of said stop means and the barrel is thereafter rotated by force exerted by (1) the gear, (2) the attached lever arm and (3) the door pushing against the stop means.

3,861,655
DEVICE FOR MIXING APPARATUS

Sidney Henry Wright, London, England, assignor to Winn & Coales (Denso) Ltd., London, England

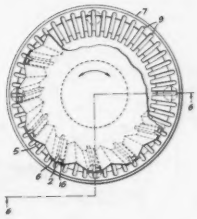
Filed Feb. 6, 1973, Ser. No. 330,010
Claims priority, application Great Britain, Feb. 10, 1972, 6278/72
Int. Cl. B01f *7/16;* **B07f** *7/24;* **B02c** *13/28*
U.S. Cl. 259—107 **10 Claims**

1. A mixing device for use in mixing apparatuus, said devices comprising a rotor and a stator, said rotor being rotatable about its longitudinal axis and having at least one blade secured thereto, said blade being substantially axially disposed along the rotor and radially extending from the rotor,

said rotor having a guide face adjacent said blade, said guide face being spaced from the working edge of the blade in a radially inward direction, for guiding the flow of the materials to be mixed in close proximity to the blade towards the cutting edge of the blade such that, when the rotor is rotated, the guide face is upstream of the blade,

said rotor further having a depression disposed substantially axially along the rotor adjacent the guide face,

at least part of said rotor bearing said blade being located within said stator and being substantially coaxial therewith,

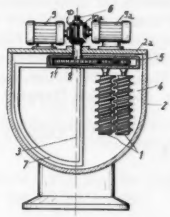


said stator having an inner wall which has a plurality of grooves, the width of the grooves being greater than the thickness of the blades.

3,861,656
VERTICAL MIXER

Armin Schmitt, Heusenstamm, Germany, assignor to Maschinenfabrik J. S. Petzholdt, Frankfurt/M, Germany

Filed Mar. 8, 1973, Ser. No. 339,107
Claims priority, application Germany, Apr. 27, 1972, 2220679
Int. Cl. B01f *7/08*
U.S. Cl. 259—118 **6 Claims**



1. A mixer for a chocolate mass comprising

1. a mixing vessel having a vertical axis and defining an interior mixing chamber, the mixing vessel having a top,

2. a rotatable screw conveyor means extending vertically from the vessel top into the mixing chamber, the screw conveyor means comprising at least two interdigitating rotatable screw conveyors mounted for rotation in opposite directions, and

3. a stirrer arranged revolvably about the vessel axis in the mixing chamber, the stirrer extending in a radial plane and having an edge portion adapted to sweep over the wall of the mixing chamber as it revolves about the vessel axis and being associated with the rotatable screw conveyor means so as to move the chocolate mass in the chamber towards the screw conveyor means.

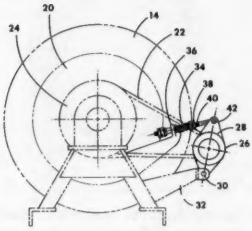
3,861,657
CHAIN TENSIONING DEVICE

Royal W. Sims, 6500 Holladay Blvd., Salt Lake City, Utah 84121

Filed Apr. 5, 1973, Ser. No. 348,209
Int. Cl. B28c *5/20*
U.S. Cl. 259—177 R **5 Claims**

1. In a self-propelled concrete mixer unit, a bowl for receiving aggregate therein, means for rotatably mounting said bowl, a chain drive having a drivable connection with said bowl, a

motor means also drivably connected with said chain and adapted to transmit driving force to said bowl through said chain, means for exerting tension on said chain and including a lever forming a chain mounting at one end of said chain, spring means yieldably urging said lever in a direction effecting chain tensioning movement of said lever, means forming



a floatable lateral drive connection between said chain and a power input to said chain, and spring means yieldably exerting lateral floatable movement of said drive whereby the chain is maintained in its respective drive connection with said bowl and power input to compensate for movements of the bowl on said self-propelled mixer unit.

3,861,658

MOBILE METAL MELT CONTACT SYSTEM FOR THE TRANSMISSION OF ANNEALING CURRENTS

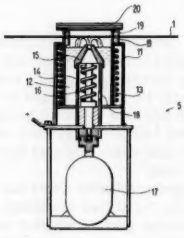
Janos Prohaszka; Andor Mandoki, and Rudolf Welesz, all of Budapest, Hungary, assignors to Licencia Talalmanyokat Ertekesito Vallalat, Budapest, Hungary

Filed Mar. 26, 1973, Ser. No. 345,201

Claims priority, application Hungary, Mar. 24, 1972, PO 512

Int. Cl. C21d *9/62*

U.S. Cl. 266—3 R **3 Claims**



1. In apparatus for annealing a continuous moving length of metal, comprising means establishing electrical contact with said metal at a pair of points spaced apart a substantial distance in the direction of movement of the metal, and means for passing an electric current from a source of current through said metal between said contact means; the improvement in which at least one of said contact means comprises a quantity of electrically conductive liquid in electrical circuit with said source of current, means to project said liquid upwardly in a fountain against the underside of said metal, said fountain projecting means comprising a pump having an upwardly directed outlet, and power means to operate said pump.

3,861,659

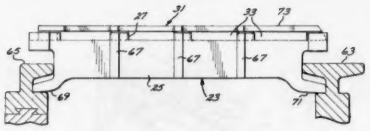
SINTER PALLET APPARATUS

Sydney T. Evenstad, El Monte, Calif., assignor to Certified Alloy Products, Inc., Long Beach, Calif.

Filed Oct. 27, 1972, Ser. No. 301,303

Int. Cl. F27b *21/06*

U.S. Cl. 266—21 **9 Claims**



1. Sinter pallet apparatus comprising:

a frame including a pair of coextensive rail means;

a plurality of elongated coextensive grate bars projecting between said rail means and formed with relatively thick structural support bodies spaced apart transversely to form flow passages therebetween, said grate bars having top and bottom sides and being formed on said respective top sides with respective first retaining elements spaced longitudinally therealong;

a plurality of elongated heat shields including relatively thin flat slats disposed above and projecting parallel with said respective grate bars and formed with respective second retaining elements projecting from the bottom sides thereof received in said respective first retaining elements to lock said respective heat shields on said respective grate bars, said second retaining elements having relatively small horizontal cross sections; and

spacer means projecting from said heat shields and spacing said respective heat shields from the respective bodies of said grate bars to form heat insulator spaces between the respective bodies of said grate bars and said heat shield slats, said spacer means and second retaining elements cooperating to form said spaces with relatively large horizontal dimensions in the longitudinal directions of said heat shields whereby sintered pellets may be received on said heat shields for conveyance under a furnace directing heat thereonto and heating of said pellets to a relatively high temperature will result in heating of said heat shields to a relatively high temperature while air trapped in said insulator spaces will act as an insulator to resist direct transfer of heat from said shields to said respective grate bars to thereby permit said respective grate bars to remain at a relatively low temperature.

3,861,660

PYROMETALLURGICAL SYSTEM WITH FLUID COOLED STIRRER

Paul R. Ammann, Reading, and Thomas A. Loose, Billerica, both of Mass., assignors to Kennecott Copper, Corp., New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,328

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 A **4 Claims**

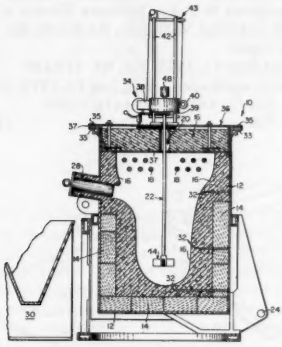
1. A stirrer for blending a material into a molten slag bath comprising

a rotatably fluid delivery assembly for delivering a fluid coolant into and out of the interior of the stirrer;

a blade assembly inclusive of a number of metallic blades for blending a material into a molten slag bath, said blades having a fluid passageway therein;

a shaft assembly connecting said blade assembly to said fluid delivery assembly, said shaft assembly being inclusive of at least two fluid passageways, one being a delivery passageway for delivering a coolant to said blade assembly from said fluid delivery assembly and the other being a return passageway for returning a coolant from said

blade assembly back to said fluid delivery assembly, said passageways in said shaft assembly being in fluid communication with said fluid delivery assembly and said passageway in said blade so that a fluid being dispensed from said fluid delivery assembly travels within the delivery passageway of said shaft assembly to said blade assembly whereupon said fluid travels through the passageway in said blades, returns to said shaft assembly and travels through said return passageway to said fluid delivery assembly for passage out of said stirrer, the stirrer being



inclusive of inner and outer concentric pipes with a space therebetween, the inner walls of said inner concentric pipe forming the return passageway and the space between said concentric pipes forming the delivery passageway, said inner concentric pipe being a copper tube and said outer concentric pipe being a shaft lined with a copper sleeve; and

a protective coating on the outer portion of the metallic blades of said stirrer, said protective coating being formed of slag and being the result of freezing molten slag on to said metallic blades.

3,861,661

COMPRESSION SPRING ASSEMBLY

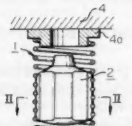
Komei Yazaki, Yokosuka, Japan, assignor to Nissan Motors Co., Yokohama City, Japan

Filed Sept. 12, 1973, Ser. No. 396,369

Claims priority, application Japan, Sept. 21, 1972, 47-110729

Int. Cl. B60g *11/52*

U.S. Cl. 267—33 **4 Claims**



1. A compression spring assembly for a suspension system of a vehicle comprising a compression spring and a substantially cylindrical resilient member press-fitted therein, wherein said resilient member has a rigid tube imbedded therein and bumper portions formed at both ends thereof in such a manner that the total length of said resilient member is longer than the length of said compression spring at its compression limit.

3,861,662

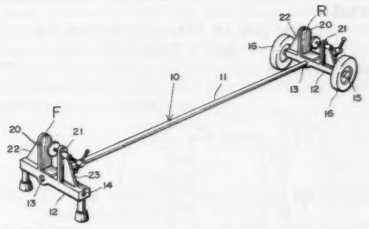
COMBINED DOOR CARRIER AND HANGING DEVICE

Carl W. Morse, 4301 S.W. 109 St., Miami, Fla. 33165

Filed Dec. 10, 1973, Ser. No. 423,541

Int. Cl. B25h *1/08*

U.S. Cl. 269—17 **3 Claims**



1. A combined door carrier and hanging device comprising a substantially elongated member, support members mounted on the ends of said elongated member, a plurality of floor engaging foot members mounted on one of said support members for maintaining said elongated member in spaced relation to the floor, an axle mounted on the other of said support members, floor engaging wheels mounted on said axle for maintaining said elongated member in substantially parallel relation with said floor, clamping means mounted on said support members adapted to engage a door positioned on said elongated member, said wheels extending beyond said other of said support members to permit the wheeling of said door along said floor and upon the swinging of said elongated member about said wheels to a substantially vertical position, the lower edge of said door will be positioned a predetermined distance above said floor to permit mounting said door.

3,861,663

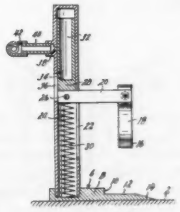
CLAMP BAR FOR FABRICS

Robert V. Strickland, 9021 Wedd, Overland Park, Kans. 66212

Filed Nov. 9, 1973, Ser. No. 414,264

Int. Cl. B25b *5/06*

U.S. Cl. 269—26 **8 Claims**



1. A clamp bar for engaging an edge portion of a sheet of fabric comprising:

a. an elongated base bar over which the edge portion of said fabric sheet may be laid,

b. a series of clamp devices mounted on said base bar in spaced relation therealong and each including a foot bar movable between an elevated position well above said base bar and a lowered position wherein it clamps said fabric against said base bar, and

c. operating means operable to move said foot bars selectively between said elevated and lowered positions, said operating means for each foot bar including power means operable when actuated to lower said foot bar to its low-

ered position, and means operable by manual lowering of said foot bar a predetermined proportion of its travel to said lowered position to actuate said power means.

3,861,664

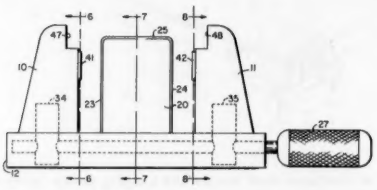
SKI CLAMPING DEVICE

Donald D. Durkee, 11 Arrowhead Rd., Marblehead, Mass. 01945

Filed July 18, 1973, Ser. No. 380,498

Int. Cl. B25b *1/10*

U.S. Cl. 269—43 **7 Claims**



1. A ski clamping device comprising:
   a. a pair of movably mounted vise jaws,
   b. a spacing member having two upstanding side surfaces disposed between the vise jaws,
   c. clamping means for simultaneously moving the vise jaws in opposite directions toward the spacing member so as to clamp a ski in a position between one vise jaw and one of the side surfaces of the spacing member and another ski in a position between the other vise jaw and the other of the side surfaces of the spacing member, and
   d. means mounting the spacing member to permit free movement thereof in a direction to equalize the pressure exerted on the skis when the vise jaws are moved to a ski clamping position.

3,861,665

LOCATION APPARATUS

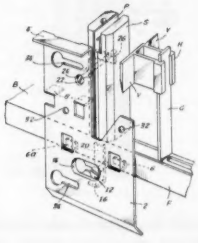
Gordon William Wynn, 308 Northridge Way, Hemel Hempstead, England

Filed Mar. 12, 1973, Ser. No. 340,370

Claims priority, application Great Britain, Mar. 13, 1972, 11605/72

Int. Cl. B27g *5/00*

U.S. Cl. 269—87.2 **23 Claims**



1. A workpiece location device for attachment to a saw guide apparatus having an elongate base terminating in a forward end and at least one saw guide member projecting upwardly from the base at the forward end thereof to define a saw guide plane relative to the base, said device comprising, in combination, first means providing an essentially planar element at said forward end of the base and being related thereto for location against said upright planar element, clear of said forward end of the base, of a side face of a rectangular elongate workpiece, and second means comprising a second element extending from said upright planar element, above said base; in a direction longitudinally beyond the forward end of the base for location thereagainst of an end face of the workpiece, said second means providing an adjustable setting for said end face in a plane at or close to the perpendicular to the saw guide plane.

3,861,666

EXAMINEE-FASTENING DEVICE FOR USE WITH AN X-AY PHOTOGRAPHING APPARATUS

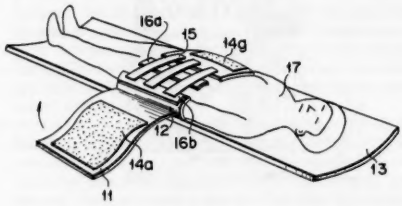
Shoji Nishiyama, Hachinohe, and Tsuyoshi Saito, Atsugi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi and Shoji Nishiyama, Hachinohe-shi, Aomori-ken, both of Japan

Filed July 11, 1973, Ser. No. 378,189

Claims priority, application Japan, July 13, 1972, 47-82865

Int. Cl. A61f *5/37*; **A61g** *13/00*

U.S. Cl. 269—328 **12 Claims**



1. An examinee-fastening device for use with an X-ray photographing apparatus comprising:
   a first flexible support band fixed at one end to one of the lengthwise edges of a bed plate and provided with engagement material;
   a preliminary fixing strip superposed with the first flexible support band and connected at one end to said one lengthwise edge of the bed plate, and provided with engagement material; and
   a second flexible support band fixed at one end to the opposite lengthwise edge of the bed plate and provided with first engagement material meshing with the engagement material of the preliminary fixing strip and with second engagement material meshing with the engagement material of the first support band.

3,861,667

APPARATUS FOR PICKING UP AND FEEDING INDIVIDUAL SHEETS FROM A STACK OF SHEETS

Hans Joachim Jahme, Eckernfordestrasse 1, Wiesbaden, Germany

Filed Mar. 26, 1973, Ser. No. 344,556

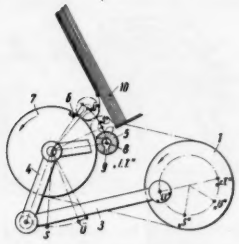
Claims priority, application Germany, Oct. 20, 1972, 2252302

Int. Cl. B65h *3/10*

U.S. Cl. 271—11 **3 Claims**

1. An apparatus for picking up and feeding individual sheets from a stack of sheets, said apparatus comprising:
   a rotatable delivery roller;
   a pick-up roller mounted about the periphery of said delivery roller, said pick-up roller being rotatable about an axis of rotation thereof, said pick-up roller having therein a plurality of radially directed suction passages opening onto the peripheral surface of said pick-up roller along a line forming a generator of said peripheral surface of said pick-up roller;
   at least one gripping device means provided on the periphery of said delivery roller for receiving and gripping a sheet being fed thereto by said pick-up roller;
   means, while said pick-up roller and said delivery roller and rotating about the respective axes of rotation thereof, for

swinging the axis of rotation of said pick-up roller backwards and forwards about the axis of rotation of said delivery roller over a plurality of positions about the periphery of said delivery roller including a first position whereat said suction passages and directed at the lowermost sheet of a stack of sheets at points spaced from an edge of said lowermost sheet by a first distance, to a



second position whereat said suction passages are directed at said delivery roller at points on the periphery thereof spaced from said gripping device means by a second distance less than said first distance; and

each of said gripping device means having thereon stop means for abutting said edge of said lowermost sheet and exerting compressive stress thereon when said pick-up roller is in said second position.

3,861,668

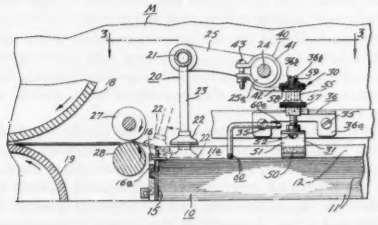
SHEET REGISTRATION APPARATUS FOR PRINTING MACHINE

Vernon Wood, 167 Harvey Ave., Doylestown, Pa. 18901

Filed Oct. 23, 1973, Ser. No. 408,514

Int. Cl. B65h *3/08, 3/48, 9/10*

U.S. Cl. 271—15 **10 Claims**



1. In a machine having printing means, magazine means for containing a stack of sheets of printing stock adjacent said printing means, gripping means for engaging the uppermost one of said sheets and advancing said one sheet in a predetermined path toward said printing means, means for operating said gripping means including a rocker shaft disposed transversely to the path of movement of said sheet and pivotable in alternate directions between limit positions, and guide means disposed alongside said magazine outboard of said path of movement for positioning said stack in said magazine, the improvement comprising: apparatus for effecting proper registry of said one sheet relative to said printing means, including foot means overlying said magazine means and adapted to engage a top one of said sheets in said stack; means for displacing said foot means downwardly from an inactive position overlying said one sheet to an active position engaged with said sheet and for displacing said sheet transversely to said path of movement when said foot means is in said active position; and means for synchronizing movement of said foot displacing means with movement of said sheet gripping means to ensure displacement of said sheet transversely against said guide means before said sheet is engaged by said gripping means; said foot displacing means including a lever, frame means mounting said lever to said machine to pivot about an axis extending in the direction of movement of said one sheet, and means carried at one end of said lever inboard of said axis for mounting said foot means to said lever; and said synchronizing means including actuator means engaging the other end of said lever outboard of said axis and means fastening said actuator means to said rocker shaft for causing said one end of said lever to pivot downwardly in response to pivotal movement of said rocker shaft in one direction; whereby the foot means is displaced downwardly and laterally in timed relation with movement of the gripping means.

3,861,669

APPARATUS FOR FEEDING SHEET-LIKE ARTICLES FROM A STACK OF ARTICLES

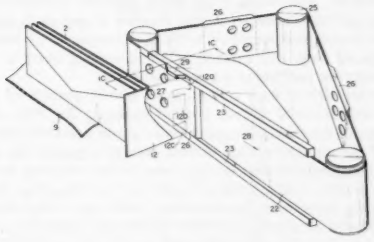
Mitsuo Kubo, Tokyo; Toshio Yokosuka, and Shunichi Nakajima, both of Yokohama, all of Japan, assignors to Tokyo Shibura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 13, 1973, Ser. No. 369,741

Claims priority, application Japan, June 15, 1972, 47-59740; June 15, 1972, 47-59741; June 15, 1972, 47-70749; June 15, 1972, 47-70750; June 15, 1972, 47-70754

Int. Cl. B65h *3/12*

U.S. Cl. 271—94 **11 Claims**



1. Apparatus for feeding or taking out sheet-like articles comprising:

a vacuum suction device having a suction surface with a plurality of suction openings therein;

an endless belt having a plurality of suction regions, each suction region being perforated with a plurality of suction holes and arranged at a predetermined interval along said belt so as to suck sheet-like articles to the outer surface of said suction region when the suction holes thereof pass over the suction openings of the vacuum suction surface while the endless belt travels in contact with the suction surface of the vacuum suction device, said suction region of said belt having a larger coefficient of friction than any other surface portion of said belt;

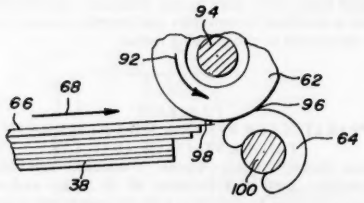
feeding means for conducting sheet-like articles in succession to the endless belt for contact therewith; and

a baffle plate having a plutaliyy of projections directed toward said belt passage, at least one of said projections being at substantially a right angle to said belt and being extended in the crosswise direction of said belt for defining at its end a predetermined gap width with the outer surface of said suction regions of said belt.

3,861,670
SHEET FEEDING APPARATUS

William A. Kraft, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 6, 1972, Ser. No. 304,032
Int. Cl. B65h 3/52
U.S. Cl. 271—122 4 Claims

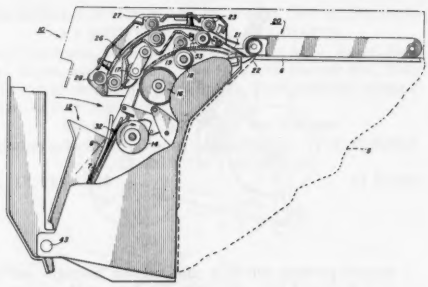


1. A sheet feeding apparatus, including:
a frame member;
a base plate mounted pivotably on said frame member, said base plate having a generally planar surface for supporting thereon a stack of sheet material;
a rotatable shaft member mounted substantially fixedly on said frame member;
a retard roller mounted substantially fixedly on said shaft member, said retard roller being mounted eccentrically on said shaft member so that rotation of said shaft member pivots said retard roller from an inoperative position spaced from one surface of an advancing sheet to an operative position in contact therewith;
a rotary driven feed roller having a first portion of the circumferential surface thereof engaging the other surface of the sheet of support material and a second portion of the circumferential surface thereof engaging the circumferential surface of said retard roller disposed in the operative position thereof prior to the advancing sheet being interposed therebetween, said feed roller being adapted to advance the sheet into the nip defined by said feed roller and said retard roller to prevent multiple sheet feeding;
means for supporting substantially fixedly said rotary driven feed roller;
means for pivoting said base plate in an upwardly direction so that the leading edge of successive uppermost sheets of the stack supported thereon engage tangentially said feed roller, said base plate with the stack supported thereon forming an inclined surface with the leading edge of successive uppermost sheets located at a level above the trailing edge thereof;
a pair of opposed, spaced side guide means, each of said pair of side guide means having a generally planar, substantially vertical surface adapted to contact opposed side edge portions of the stack, one of said side guide means being mounted substantially fixedly on said base plate and the other of said side guide means being mounted movably on said base plate so as to engage and substantially align the side edges of the stack mounted on said base plate and interposed therebetween; and
rear guide means mounted movably on said base plate, said rear guide means having a generally planar, substantially vertical surface disposed substantially normal to the vertical surfaces of said pair of side guide means and adapted to contact the trailing edge of the stack so as to align and locate the leading edge thereof in position to engage said feed roller when said base plate pivots in an upwardly direction.

3,861,671
LIFTABLE BAIL BAR FOR ALLOWING RETURN OF MULTI-PLY SEPARATED SHEETS TO STACK

August Hoyer, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 19, 1973, Ser. No. 380,802
Int. Cl. B65h 3/52
U.S. Cl. 271—122 2 Claims



1. Apparatus for separating and feeding individual sheets of material from a stack of sheet material comprising:
separator means adapted for frictional engagement with the bottom sheet in the stack to displace the sheet in a direction parallel to the plane of the sheet;
pressure means, adapted for engagement with the top of the stack to provide a force normal to the plane of the sheets for maintaining the bottom sheet in frictional engagement with said separator means;
feed means for engaging and feeding the separated sheets away from the stack, said feed means including a first feed roll positively driven in the feed direction;
a second feed roll adapted for cooperation with said first roll, said second roll being urged in a direction opposed to the first feed roll direction, friction between said first and second rolls or between said rolls and a single sheet of material causing said second roll to rotate in the feed direction, reduced friction between multiple sheets presented between said first and second rolls allowing said second roll to rotate in a direction opposite from said feed direction to push the multiple sheets back toward the stack; and,
means for relieving the pressure exerted on the top of the stack by said pressure means after engagement of the separated sheet by said feed means to minimize the drag on the separated sheet caused by frictional contact between the separated sheet and the adjacent sheet in the stack and allow the multiple sheets pushed toward the stack by said second roll to be returned thereto.

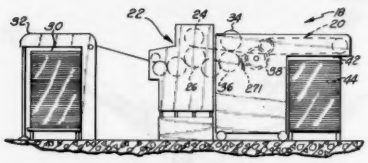
3,861,672
SHEET MATERIAL HANDLING APPARATUS AND METHOD

Robert K. Norton, Twinsburg, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Dec. 28, 1973, Ser. No. 429,032
Int. Cl. B65g 37/00
U.S. Cl. 271—203 31 Claims

1. An apparatus for sequentially operating on sheets of material and depositing each of the sheets of material in turn at a receiving station, said apparatus comprising a first set of grippers, said first set of grippers including a plurality of spaced apart gripper assemblies, means for supporting said gripper assemblies of said first set of grippers for sequential movement along a path extending between the pickup station and the receiving station, means for maintaining a predetermined path length distance between said gripper assemblies of said first set of grippers, a second set of grippers, said second

set of grippers including a plurality of gripper assemblies disposed along the path and interspersed between gripper assemblies of said first set of grippers, means for maintaining said predetermined path length distance between said gripper assemblies of said second set of grippers, means for enabling variations to occur in the path length distance between gripper assemblies of said first set of grippers and gripper assemblies of said second set of grippers, means for sequentially operating said gripper assemblies to sequentially engage sheets of



material at the pickup station and to sequentially release the engaged sheets of material at the receiving station, and drive means for sequentially moving said gripper assemblies along the path, said drive means including means for varying the speed of movement of said gripper assemblies of one of said sets of grippers relative to the speed of movement of said gripper assemblies of the other of said sets of grippers.

3,861,673

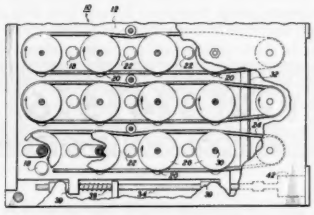
BI-DIRECTIONAL SHEET TRANSPORT

Raymond G. Ticknor, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1973, Ser. No. 410,646

Int. Cl. B65h *5/06*

U.S. Cl. 271—225 **10 Claims**



1. Apparatus for sheet transport where the sheet may be driven in a first direction of motion and then in a second and different direction of motion by the same apparatus comprising;

a ball carriage for rotatably retaining a plurality of balls in a spaced apart relationship;

first and second sets of individual balls rotatably mounted to said ball carriage positioned to engage a sheet,

individual balls of said first and second sets of balls being interspersed, and spaced from one another on said ball carriage,

drive means engaging only one of said first and second sets of balls at a time,

said drive means, when engaging said first set of balls, rotatably driving said first set of balls in said first direction of motion,

said drive means, when engaging said second set of balls, driving said second set of balls in said second direction of motion, and

means for shifting said engagement of said drive means from said first set of balls to said second set of balls;

wherein said drive means comprises a plurality of rotatably driven and spaced apart frictional drive surface means.

3,861,674

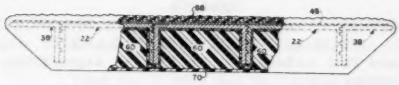
COMPOSITE DIVING BOARD

Norman Buck, Jr., 6054 51st N.E., Seattle, Wash. 98115, assignor to Norman Buck Manufacturing Co., Inc., Seattle, Wash.

Filed July 9, 1973, Ser. No. 377,632

Int. Cl. B32b *3/16, 27/40, 3/02;* **A63b** *5/10;* **B32b** *5/18*

U.S. Cl. 272—66 **16 Claims**



1. A composite diving board adapted to be secured at its inboard end portion to a fixed support, be supported intermediate its length by a fulcrum, and having its tip portion free and unsupported comprising: a metallic web having a plurality of downwardly projecting ribs; substantially low density polyurethane foam disposed between adjacent ribs and connected with the bottom surface of said web and the adjacent side walls of said ribs, and wherein the substantially low density polyurethane foam is adjacent the outer surface of an outer rib, adjacent the bottom surface of said web, and said foam extends angularly toward and terminates at an outer edge of said web; and an enveloping layer means enclosing and connected with said web, ribs, and polyurethane foam.

3,861,675

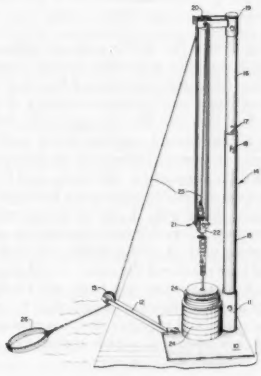
SWIMMER TRAINING DEVICE

Robert Thorenz Hopper, 1214 S. 8th Ave., Arcadia, Calif. 91006

Filed Oct. 26, 1973, Ser. No. 410,111

Int. Cl. A63b *31/00*

U.S. Cl. 272—71 **1 Claim**



1. A swimmer training device comprising:

a. a base;

b. an extendible post upstanding from said base having telescopic tubes having spaced openings along their length through which a locking pin may be passed to maintain a desired height;

c. multiple pulley means mounted at the top of said post;

d. a second pulley means;

e. variable weight means releasably connected to said second pulley means comprising a stack of varying size and weight weights which may be added or removed as desired;

f. swimmer attaching means in the form of a belt adapted to be secured about the body of a swimmer;

g. line means one end of which is secured to said second pulley means, said line means being roved back and forth

over the multiple pulley means between said first and second pulley means and the other end of said line being connectable to said swimmer attaching means, and pulley guide means extending obliquely off said base through which said line means is passed and maintained close to a parallel attitude relative to the swimmers body in the water.

3,861,676

DISCONNECTABLE TRAINING DEVICE FOR SPORTS SUCH AS JUJITSU, JUDO, OR KARATE

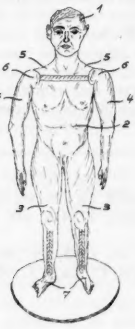
Richard Paul, Eichendorffstr. 7, 5202 St. Augustin Sieg 1, Germany

Filed Feb. 23, 1973, Ser. No. 335,350

Claims priority, application Germany, Mar. 2, 1972, 2209988

Int. Cl. A63b *69/00*

U.S. Cl. 272—76 **1 Claim**



1. A training device for sports such as jujitsu, judo, and karate, in which gripping and close contact engagement of simulated form is important, said device having the shape and size of a human being and formed of a body of elastomeric material including legs and feet integral with said body and separate arms of elastomeric material joined at the shoulders to said body and positionable selectively in different positions, and a base plate for supporting said body, said feet and base plate having means releasably connecting said legs to said base plate, said means comprising a pair of complementary male and female members releasable interengaged on each foot and on said base plate, one of said members of each pair being formed on said base plate and the other of said members being formed on each foot, so that said body will be disconnected from said plate upon application of sufficient force to lift said body from said plate, and springs extending upwardly longitudinally in said legs from said means connecting said legs to said plate.

3,861,677

EXERCISERS

N. R. Wheeldon, 24/25 McQuoid St., Queanbeyan, A.C.T. 2620, Australia

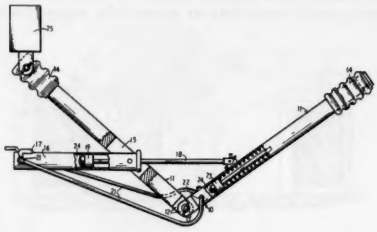
Filed Sept. 21, 1973, Ser. No. 399,505

Claims priority, application Australia, Sept. 22, 1972, 543/72

Int. Cl. A63b *21/00*

U.S. Cl. 272—79 B **5 Claims**

1. An exerciser comprising a pair of arms pivotally connected at one end, and a fluid pump connected to the arms, said fluid pump comprising a cylinder pivotably connected to one arm and a rod bearing at its end a piston projecting into the cylinder, the rod being pivotably connected at its other end to the other of the said arms, the blind end of the piston being provided with at least one stop cock constituting an aperture of a restricted cross-sectional area, the stop cock being connected to a fluid reservoir containing fluid and positioned within one of said arms, whereby relative movement



between the arms will serve to pump the fluid into, or out of said fluid reservoir through said stop cock constituting said aperture.

3,861,678

POOL CHALLENGER INDICATOR IN COMBINATION WITH POOL TABLE BORDER AND PLURALITY OF TOKENS

Harry M. Fansler, 500 E. Fulton, Grand Rapids, Mich. 49502

Filed May 21, 1973, Ser. No. 362,225

Int. Cl. A63d *15/00*

U.S. Cl. 273—3 R **3 Claims**

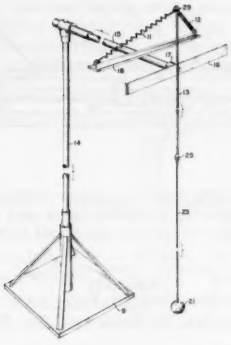
1. A pool table challenger register comprising:

an indicator panel in combination with the border of a pool table and a plurality of tokens to be placed on said panel, said tokens each being of a predetermined size and shape which is substantially identical to the size and shape of the others of said tokens, said panel having an upper face and a lower face, means for attaching said lower face to said border; said panel being flexible to conform to the surface of the pool table border, and having only an insignificant thickness to avoid interference with a pool cue during play; a plurality of adjacent observable, token locator zones visible at said upper face, each of said zones occupying a generally equal token-conforming area having a size and shape which is generally equal to that of one of said tokens, each of said zones being spaced apart from one another along the length of said panel, each said area being marked on said panel so that it is readily distinguishable from the remainder of said upper face of said panel, each of said zones having an observable identifying indicia thereon, said indicia identifying said zones in successive series along the length of said panel, whereby persons wishing to challenge the winners of a game in progression and successive games may place one of said tokens on the next available successive zone with its indicia.

3,861,679
PRACTICE TETHERED BALL

James H. Culpepper, 1712 Beech, Pine Bluff, Ark. 71601

Filed Aug. 10, 1973, Ser. No. 387,448
Int. Cl. A63b 69/38
U.S. Cl. 273—29 A 1 Claim

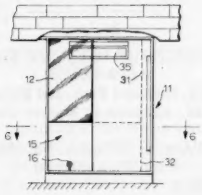


1. A game apparatus, including a support structure having an elevated horizontally disposed elongated first member connected thereto, said first member being connected to said support structure such that one of its end is fixed and its other end is free, an elongated second member connected intermediate its ends to said first member at a generally right angle thereto and at a selected distance from the ends thereof, an elongated rigid member vertically disposed and rotatably coupled intermediate its ends to the free end of said first member, first and second elongated spring members having one end connected to the upper end of said rigid member and their other ends connected to respective ends of said second member, a stabilizing member connected to said rigid member and rotatably coupled to the free end of said first member, and wherein a ball is suspended from the lower end of said rigid member.

3,861,680
DRIVING RANGE

William F. Mowrer, 402 W. Commercial St., East Rochester, N.Y. 14445

Filed July 19, 1973, Ser. No. 380,609
Int. Cl. A63b 69/36
U.S. Cl. 273—35 B 8 Claims

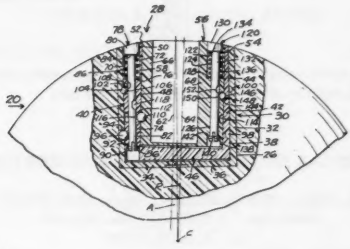


1. A year round golf driving range comprising in combination, a clubhouse with attached enclosure containing a walkway providing access into a plurality of individual stalls each having a partially closed transparent front window with a lower doorway opening for egress of a golf ball driven from inside the stall and each adapted to be heated individually, a driving range provided with a plurality of target areas arranged at different distances from said clubhouse to receive balls driven through said opening by a person inside said stall and a teeing mat positioned within the stall in a position aligned with the opening and the driving range such that a golfer may freely swing a club to impact a ball on the teeing mat and send it out said opening toward said range while the person has unobstructed view out said transparent front window.

3,861,681
BOWLING BALL INSERT STRUCTURE

Calvin F. Kelsey, 2755 E. Maple Rd., Birmingham, Mich. 48008

Filed Nov. 7, 1973, Ser. No. 413,644
Int. Cl. A63b 37/00
U.S. Cl. 273—63 B 47 Claims



1. Insert structure adapted to be mounted within a radial bore in a bowling ball, said insert structure comprising,

means forming a sleeve and mounting means adapted to mount said sleeve within such radial bore for rotation about an axis substantially coincident with a radius of the ball through the bore,

said sleeve having a wall which defines an aperture therein having surface portions lying on a cylinder, the axis of which is angled in non parallel relation to the axis of rotation of said sleeve,

means forming a plug engaged within said aperture for rotation relative to said sleeve about said aperture axis,

said plug having a hole which is eccentrically located therein and which is adapted to receive a human digit,

said sleeve and plug having end portions adapted to be located adjacent the surface of a sphere defined by the ball and said hole having an end which opens adjacent said surface,

the angle of said aperture axis and the eccentricity of the location of said hole being so related that in one rotative position of said plug and sleeve relative to each other, said end of said hole is substantially centered with respect to said axis of rotation of said sleeve.

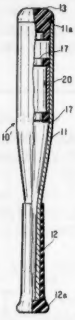
3,861,682
BASEBALL BAT

Hirokazu Fujii, No. 59, 2-chome, Obiraki-cho, Fukushima-ku, Osaka, Japan

Filed Oct. 5, 1972, Ser. No. 295,297
Claims priority, application Japan, Mar. 6, 1972, 47-27313
Int. Cl. A63b 59/06
U.S. Cl. 273—72 A 9 Claims

1. A substantially hollow metallic ball bat comprising a generally cylindrical barrel portion and a generally cylindrical handle portion, said barrel portion being larger in diameter than said handle portion said barrel portion terminating in an open end, a cap element inseparably mounted on and extending into said open end two, spaced apart metallic-sound arresting ring members centrally disposed in the barrel portion of

the ball bat and a metallic cylindrical repelling member disposed between said sound arresting ring members, said repelling member being contiguous with said ring members and the inner periphery of the barrel portion of the bat.



3,861,683

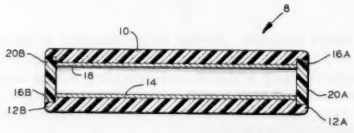
TUBULAR SHAPED PROJECTILE FOR SPORTING GAMES

Carl M. Henry, 1956 Franklin St., Lucas, Ohio 43624

Filed Apr. 18, 1973, Ser. No. 352,171

Int. Cl. A63b *65/00*

U.S. Cl. 273—106 R **2 Claims**



1. A projectile for sporting games comprising:

a. A cylindrically shaped tubular member of nylon composition having a cylindrically shaped cavity within said tubular member;

b. A hollow metallic sleeve member inserted in said cavity as a support member; said metallic sleeve having a diameter equal to the diameter of the cavity in said tubular member;

c. Means for sealing said cavity at each end of the tubular member.

3,861,684

GAME APPARATUS

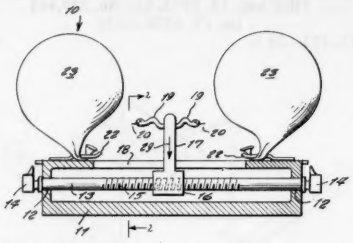
David R. Gastin, Hay Denville, Logan, Ohio 43127, and Ronald A. Baaske, 5743 Ohio St., Vermilion, Ohio 44089

Filed Oct. 29, 1973, Ser. No. 410,507

Int. Cl. A63f *3/00*

U.S. Cl. 273—134 G **1 Claim**

1. In a game apparatus, the combination of a base, a threaded shaft supported rotatably on said base, a knob secured on each end of said shaft, a threaded nut engaged on said shaft, a radially extending post integral with said nut, a figurine extending from two opposite sides of said post, each said figurine comprising a snake design having a projecting tongue, said tongues comprising oppositely extending pointed pins, said post extending through a slot of said base, longitudinal axes of said shaft and said pins being parallel to the longitudinal axis of said slot, said slot preventing rotation of said nut together with said shaft when said shaft is rotated, an inflated rubber balloon secured in a clip at each end of said base, said balloons being positioned at opposite ends of said axis of said pins, whereby rotation of either of said knobs axially advances said pins toward or away from said balloons; said apparatus including a spinner comprising a card having different numerals printed in a circular arrangement about a central rivet supporting a rotatable arrow, said numerals representing a number of turns for either said knob.



3,861,685

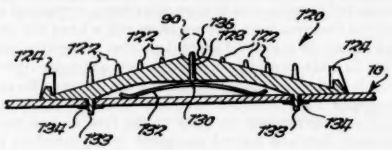
BALL EJECTING CONE-SHAPED CHANCE DEVICE

Nicholas D. Trbovich, 28 Tanglewood Dr., West, Orchard Park, N.Y.

Division of Ser. No. 125,588, March 18, 1971, Pat. No. 3,758,113. This application Aug. 9, 1973, Ser. No. 387,125

Int. Cl. A63f *7/10*

U.S. Cl. 273—138 R **10 Claims**



1. A game apparatus comprising: a body having a base and an upper conical surface, a plurality of pegs projecting upwardly from said conical surface, a plurality of ball receiving pockets disposed about the marginal edge of said conical surface, said conical surface being provided with a hole centrally of said surface, a plunger slidably disposed in said hole, ball seating means operatively associated with said plunger, means mounted in said body biasing said plunger to an upper position wherein the upper end of said plunger projects above said conical surface, said plunger being depressed against said biasing means by a force exerted against a ball placed on the upper end of said plunger and on said seating means whereby removal of said force causes said plunger to expel said ball.

3,861,686

CHANCE DEVICE FOR USE WITH BOARD GAME APPARATUS

Jeffrey D. Breslow, Highland Park, and Bette M. Kaelin, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Aug. 3, 1973, Ser. No. 385,397

Int. Cl. A63f *3/00*

U.S. Cl. 273—138 R **4 Claims**

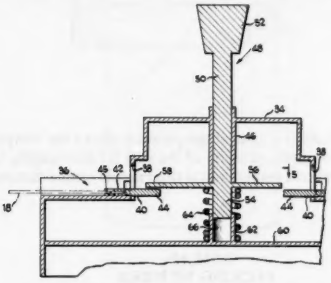
1. A chance device comprising:

a housing;

means defining a plurality of chance stations formed on the outside of said housing, each chance station including a pivotally mounted lever having one end outside of the housing and another end extending into the housing;

a plurality of chance pieces, adapted to be received on the outside end of each lever at said chance stations, each chance piece having indicia thereon; and

random selection means mounted on said housing operably associated with said chance stations and engageable with the inside end of one of said levers for randomly and physically altering the disposition of one chance piece at one station thereby signifying the attainment of or failure to reach a predetermined goal, said random selection means including a generally vertical shaft rotatably and reciprocally mounted on said housing about its longitudinal axis, said shaft having a hand manipulatable upper end extending outside of said housing and a lower end extending into said housing, said lower end having generally horizontal alignment means secured thereto for rotation with said shaft, said alignment means passing said chance stations as said shaft rotates and aligning with the inside end of one of said levers after said rotating shaft comes to rest, said selection means being selectively movable between a normal alignment position wherein said alignment means is spaced from said inside lever end and an engagement position wherein said alignment means is operably connected to the inner end of said lever positioned at the aligned chance station in response to reciprocal movement of said shaft, whereby said chance piece's position is physically changed due to the pivotal movement of said lever.

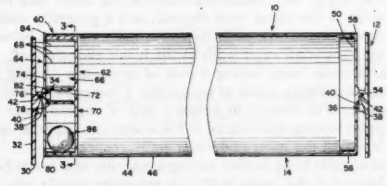


3,861,687

WEIGHT INDEXED DRUM CHANCE APPARATUS

Raymond W. Ratliff, Dallas, Tex., assignor to Great Games, Inc., Addison, Tex.

Filed Nov. 21, 1972, Ser. No. 308,605
Int. Cl. A63f *5/04*
U.S. Cl. 273—143 E **5 Claims**



1. In a chance apparatus of the type wherein a drum having segments disposed circumferentially about its exterior periphery is supported for rotation about its axis, the combination with said drum of a detent mechanism comprising:

a molded cup member supported for rotation with the drum and including a cylindrical portion having a plurality of axially extending ridges disposed at equally spaced points around its interior periphery and a radially extending wall portion located within said drum enclosing one end of the cylindrical portion;

said cup member further including a relatively small diameter hollow cylindrical portion extending from the radially extending wall portion;

a molded disk member received in the cylindrical portion of the cup member to enclose the opposite end thereof;

said disk member further including a cylindrical portion adapted for cooperation with the small diameter cylindrical portion of the cup member to retain the disk member on the cup member;

weight means enclosed in the cylindrical portion of the cup member for cooperation with the ridges to terminate each rotation of the cup member with one of the segments of the drum in a predetermined orientation; and

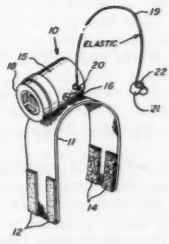
an axle extending from the disk member and positioned outside of said drum.

3,861,688

GOLF TRAINING DEVICE

Warren H. Butler, 1900 E. 86th St., Apt. 124, Minneapolis, Minn. 55420

Filed June 6, 1973, Ser. No. 367,466
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 B **7 Claims**



1. A training device usable for the development of physical skills in various sporting activities comprising:

a signaling device for signaling the occurrence of a predetermined relative movement between a first portion of a user's body and a reference member other than said first portion of the user's body and in which at least one of said first position and reference member is moveable relative to the other when the user practices such sporting activity, said signaling means having an activation member movable between first and second positions, one of said positions being an activating position at which said activation member activates the signaling device to produce a desired signal, and the other of said positions being a non-activating position at which said activation member prevents the signaling device from producing such a signal;

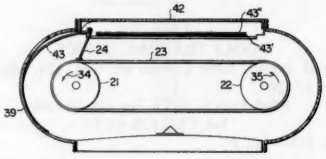
means for connecting said signaling device to one of said first portion of the user's body and said reference member; and

a longitudinally stretchable elastic member having one end connected to said activation member of said signaling device and having another end with connecting means for connection of said other end to the other said first portion of the user's body and said reference member, such that said activation member is moved to its signal activating position when said predetermined movement between said first portion of the user's body and said reference member occurs, the elasticity of said elastic member being such that initial stretching of said elastic member causes movement of said activation member from said first to said second position, but such that further stretching of said elastic member permits relative movement between said first portion of the user's body and said reference member while the activation member is held in said second position, without significantly restraining the relative movement and performance of the user.

3,861,689
AUTOMATIC RECORDING MEDIUM CHANGING DEVICE

Tadashi Nagaoka, Nishinomiya, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 9, 1973, Ser. No. 322,215
Claims priority, application Japan, Jan. 20, 1972, 47-7975
Int. Cl. G11b *17/12*
U.S. Cl. 274—10 R 4 Claims



1. An automatic recording medium changing device comprising

a. a storage case with an outlet opening formed along one side thereof for storing therein in stacked form a plurality of disk-shaped recording media each having a center engaging hole;

b. a turntable upon which said recording medium is rotated, said storage case being disposed immediately above said turntable and spaced therefrom by a suitable distance, said case being further provided with an inlet opening along the side thereof in opposed relation with said outlet opening;

c. means for engaging with said center engaging hole of said recording medium so as to releasably hold it in position upon said turntable;

d. means for recording the signals on said recording medium or reproducing the signals recorded on said recording medium upon said turntable;

e. first guide means extending from said outlet opening of said storage case to said turntable;

f. second guide means extending from said turntable toward said inlet opening of said storage case, said first and second guide means being defined by a curved wall bulging outwardly;

g. means for engaging with the lowermost recording medium in said storage case so as to transport the same through said outlet opening along said guide means toward said turntable, said recording medium transporting means comprising an endless belt disposed within a loop defined by said storage case, said first guide means, said turntable and said second guide means; and

h. hook means attached to said endless belt for engagement with the recording media in said storage case and upon said turntable.

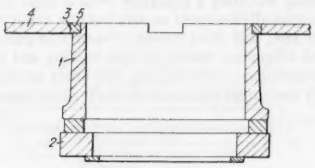
3,861,690
MECHANICAL SEAL DEVICE

Bertil Englesson, Bromma; Karl-Ingvar Eriksson, Ekero; Willy Kallstrom, Spanga, and Torvald Stahl, Alvsjo, all of Sweden, assignors to ITT Ind., Inc., New york City, N.Y.

Filed Feb. 8, 1972, Ser. No. 224,498
Claims priority, application Sweden, Feb. 16, 1971, 1928/71
Int. Cl. F16j *15/34*
U.S. Cl. 277—26 2 Claims

1. An improved mechanical seal device wherein there is provided a stationary seal ring and a rotatable seal ring which are pressed against each other by one or more resilient devices, wherein the improvement comprises:

means coupled to one of the seal rings for holding the same in contact with the other seal ring during normal operation of the seal, said means being made of a fuse metal

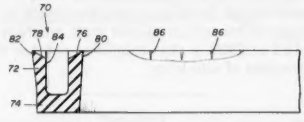


which fuses at a critical temperature above the temperature of normal operation of the seal for disengaging said stationary and rotatable seal rings at said critical temperature.

3,861,691
PACKING MEMBER

John H. Wheeler, Dallas, Tex., assignor to The Texacone Co., Dallas, Tex.

Continuation of Ser. No. 208,803, Dec. 16, 1971, abandoned.
This application June 6, 1973, Ser. No. 367,522
Int. Cl. F16j *15/32*
U.S. Cl. 277—205 1 Claim



1. A packing member comprising:

an annular body defined by a generally right circular cylindrical outer wall, a generally right circular cylindrical inner wall, a generally radially extending, substantially flat upper wall extending between the inner and outer walls at the upper ends thereof, and a generally radially extending, substantially flat lower wall extending between the inner and outer walls at the lower ends thereof;

said annular body having a pair of oppositely sloping end faces defining a pair of concentric grooves formed in the upper wall thereof to define a pair of aligned inner and outer sealing lips located at the intersections of the upper wall and the inner and outer walls, respectively;

said annular body further having a plurality of circular holes formed in the upper wall each extending axially into said wall from equally spaced points concentric with and located between the grooves;

each of said holes tangentially intersecting both of said grooves to form slot-shaped openings interconnecting the holes and the grooves;

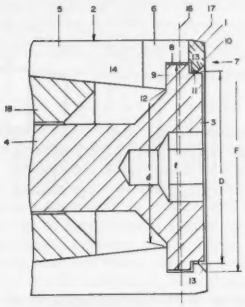
said circle of axially extending holes being centered between the inner and outer walls of the body;

said grooves being equally and oppositely spaced relative to the holes and having generally wedge-shaped cross sections each characterized by a substantially axially extending surface adjacent the holes and an angularly extending surface comprising said sloping end face intersecting said body at the intersection of the upper wall and the adjacent wall.

3,861,692
COLLET AND ADJUSTING SCREW THEREFOR

Helmut Karl Patzer, Ilgen, Germany, assignor to Borg-Warner-Stieber GmbH, Heidelberg, Germany

Filed Aug. 11, 1972, Ser. No. 280,006
Claims priority, application Germany, Aug. 20, 1971, 7131832
Int. Cl. B23b *31/40*
U.S. Cl. 279—2 R 10 Claims

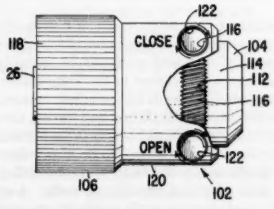


1. In a mandrel having an integral expansible collet for gripping a work piece provided with slotted portions extending inwardly alternately from opposite ends thereof, with an internal annular groove disposed inwardly of its front end surface thereby forming an annular lip portion between said groove and said front surface, and with a central opening in its front end, and means disposed within said collet for expanding it including an axially movable adjusting member having an annular head engaged in said groove, the improvement comprising providing said front end surface of said collet with a chamfer portion extending inwardly toward said groove, the larger diameter of said chamfer portion being at least as great as the outer diameter of the annular head of said adjusting member whereby the head of said adjusting member may be moved from a position contiguous with the front end surface of the collet and into said groove by moving said head axially against said chamfer portion with the force required to expand said collet sufficiently to permit said head to pass through said central opening in the front end of the collet and into said groove wherein said collet can contract, and the lip portion restrains the head against axial removal from the collet.

3,861,693
CHUCK

Robert H. Huber, Easley, S.C., assignor to The Singer Company, New York, N.Y.

Filed Aug. 20, 1973, Ser. No. 389,926
Int. Cl. B23b *31/12*
U.S. Cl. 279—61 6 Claims

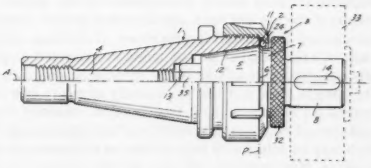


1. A drill chuck comprising:
a. a body having a head provided with an axial bore extending inwardly from one end thereof, and a plurality of inclined bores converging into the axial bore slanted toward said end,
b. the body having a shank formed below the head,
c. a nut disposed about the shank and free to move axially relative thereto,
d. the nut having a threaded outer circumference and a forward surface,
e. a plurality of key slots radially formed in the forward surface of the nut,
f. a plurality of jaws, each having a key formed at the bottom thereof slidably disposed into the key slots of the nut to extend through the inclined bores into the axial bore,
g. a sleeve having internal threads mounted for rotation on the body but held against axial movement,
h. the outer circumference of the nut to threadedly engage the internal threads of the sleeve,
i. holding and rotating means formed on one or the other of the sleeves and the end body,
j. the holding and rotating means includes a pair of pilot holes formed in the sleeve in superposition to an annular threaded groove formed in the head of the body,
k. the pair of holes formed in the sleeve are spaced apart so as to be on diametrically opposite sides of the threaded sleeve, whereby the incline of the threads within the threaded groove will be oppositely disposed, slanted in one direction for one of the pilot holes and slanted in the other direction for the other pilot hole, and
l. a chuck key having a threaded end projecting through one of the pilot holes to hold the sleeve and to engage the threads of the threaded grooves of the head of the body so that turning of the key will cause the head and the nut to rotate to produce an axial shifting of the nut whereby the jaws will be either tightened or loosened by moving into or out of the axial bore of the head

3,861,694
QUICK-CHANGE CHUCK ASSEMBLY

Fritz Weber, Tittertenstrasse 17, Reigoldswil, Switzerland

Filed Nov. 12, 1973, Ser. No. 414,829
Claims priority, application Switzerland, Nov. 14, 1972, 016658/72
Int. Cl. B23b *31/04*
U.S. Cl. 279—79 9 Claims



1. A chuck assembly comprising:
a chuck body having a front face and formed with a bore terminating at said face and having a backwardly tapered seat;
a chuck insert having a backwardly tapered portion snugly receivable in said seat and a forwardly tapered portion terminating at a back edge of predetermined diameter

lying substantially at said front face with said insert received in said seat;

a nut threadedly engageable over the front end of said body and having a throughgoing hole formed with a forwardly tapered region having a lesser inner diameter greater than said predetermined diameter of said insert, whereby said insert can pass through said hole, said region being spacedly juxtaposable with said forwardly tapered portion of said insert on screwing of said nut onto said body; and

a split ring in said nut on said region and engageable with said front face and with said forwardly tapered portion, whereby, on screwing of said nut back on said body, said front face forces said ring forwardly on said forwardly tapered portion and region to compress said ring and lock said insert in said seat.

3,861,695

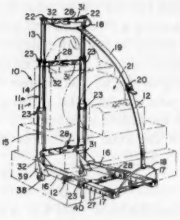
LUGGAGE CARRYING DEVICE

Ruth W. Shourek, and John Edward Shourek, both of 600 W. Forest Ave., West Chicago, Ill. 60185

Filed July 12, 1973, Ser. No. 378,771

Int. Cl. B62b *5/02, 1/00*

U.S. Cl. 280—5.24 **12 Claims**



1. A portable luggage carrying device having collapsible portions to provide for folded transport and including an upright back portion and a base portion which are unfoldable into an operative extended position, the improvement comprising:

said upright back portion including a pair of spaced post means and each post means comprising a plurality of joined sections including extensible and collapsible sections;

said base portion including a pair of spaced leg members pivotally attached to an associated post means of the upright back portion;

collapsible crossbar means interconnecting the spaced post means of the upright back, and crossbar means also interconnecting the spaced leg members of the base portion; each of said crossbar means being constructed to pivotally attach to at least one of the associated post means of the upright back and also to pivotally attach to one of the spaced leg members of the base portion, whereby each of said spaced post means and each of said spaced leg members may be selectively moved into an adjacent collapsed position thus reducing the size of the luggage carrying device for easy portable transport.

3,861,696

DEVICE FOR DAMPING ROCKING MOVEMENTS OCCURRING IN A CHASSIS

Axel Gerhard Varne Gustafsson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed June 1, 1972, Ser. No. 258,776

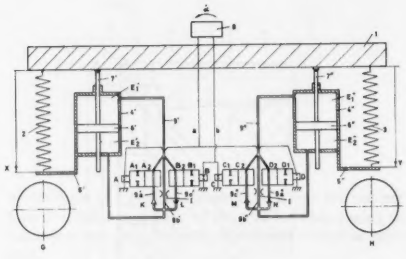
Int. Cl. B62d *27/04*

U.S. Cl. 280—6 H **14 Claims**

1. Apparatus for damping the rocking movements of a vehicle chassis comprising:

said chassis being provided with at least four wheels, one at each corner, and a damping means operatively connected between the chassis and each vehicle wheel which wheel is further connected by means of suspension apparatus to the chassis,

said damping means including means for varying the damping effect thereof,



means responsive to the angular velocity of the chassis about a predetermined axis for generating a manifestation representative of such rocking movement and with said manifestation having a sign indicative of the direction of such angular velocity,

and control means governed by the magnitude of said manifestation and its sign for selectively increasing or decreasing the damping effect of said damping means on the upward and downward movement of the associated wheel relative to the chassis.

3,861,697

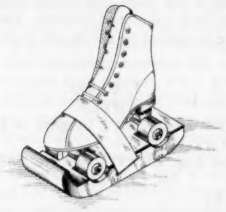
ROLLER SKATE WALKER

Samuel L. Dolce, 1421 N. Kirby Dr., La Habra, Calif. 90631

Filed July 30, 1973, Ser. No. 383,674

Int. Cl. A63c *3/00*

U.S. Cl. 280—11.1 R **24 Claims**

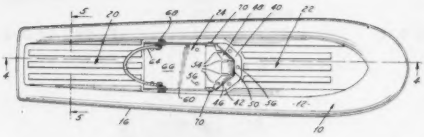


1. In an attachment for roller skates, a construction comprising, in combination, a base member formed to provide pairs of downwardly disposed surfaces in suitably spaced relation and indented with respect to the longitudinal sides of said base member, abutting walls intermediate transverse pairs of said downwardly disposed surfaces, and having strap fastening means secured in overlying relation to said base member adapted to overlie the shoe onto which the roller skate is mounted; said downwardly disposed surfaces acting to constrain forward and rearward motion of roller skate wheels therein engaged, said abutting walls acting to constrain lateral motion of said wheels, and said strap fastening means acting to detachably secure said base member to said wheels, hence to the skate and to the shoe onto which the skate is mounted.

3,861,698
COMBINATION SNOWSHOE AND SKI

James W. Greig, 565 Barrington Rd., Grosse Pointe, Mich. 48230

Filed July 11, 1973, Ser. No. 378,077
Int. Cl. A63c 5/00
U.S. Cl. 280—11.13 Y 8 Claims

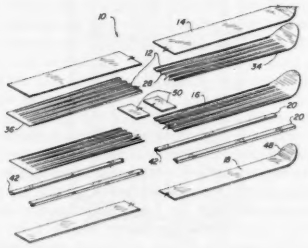


6. A combination snowshoe and ski comprising: a lightweight hollow elongate plastic envelope having a rear end and an upturned forward end and formed of a plastic having a relatively low friction on snow, said envelope having a bottom portion defining a snow-running surface, said bottom portion having a plurality of longitudinally spaced-apart transversely extending corrugations having gently sloping forward faces and snow-biting rearward faces, said envelope having a top portion secured to said transversely extending corrugations to rigidify the envelope, and a foot binding on the top portion.

3,861,699
SKI CONSTRUCTION

Arpad A. Molnar, Boulder, Colo., assignor to Molnar & Co., Inc., Boulder, Colo.

Filed July 30, 1973, Ser. No. 383,988
Int. Cl. A63c 15/00
U.S. Cl. 280—11.13 L 13 Claims



1. A recreational board construction comprising in combination:

an elongated core member including hollow tubular elements with connecting web elements retaining the tubular elements in parallel spaced relationship, elongated open corrugations between said tubular elements,

a filler material means in the open corrugations, for controlling the torsional response of the board,

a planar bottom element, and

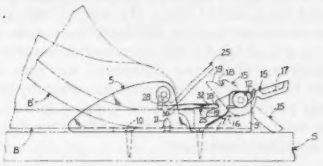
an adhesive bonding medium securing the bottom element to the bottom surface of the core member.

3,861,700
CROSS-COUNTRY TYPE SKI BINDING SYSTEM

Wilhelm Fredriksen, 19972 Mitchell, Detroit, Mich. 48234

Filed July 31, 1972, Ser. No. 276,839
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 B 3 Claims

1. Improvement in cross-country type ski boot binding means consisting of a toe iron, a clamp member and a lock member for said clamp member both pivotally mounted via longitudinally spaced apart respective stationary pivot axes, said clamp member comprising a bail whose ends are journaled on said toe iron which define the stationary pivot axis for the clamp member to move from a lowered, forwardly extending clamping position in which it presses down upon the sole adjacent the toe of a ski boot for clamping the latter in said toe iron and a raised upwardly extending released position in which the ski boot is released from said toe iron, the lock member being positioned ahead of said clamp member, said improvement comprising means for holding the clamp member and the lock member in engagement with each other after movement of said clamp member from its released position to its clamping position, said clamp member being a spring wire bail, said lock member being pivotally mounted as

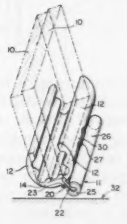


aforesaid and having a detent formed in the rearward end thereof for engagement with the forward end of the clamp member upon pivoting of the clamp member to the clamping position whereupon the engaging portions of the clamp member and detent form a pivot axis which moves downwardly over-center of the two stationary pivot axes defined by the pivotal mountings of the clamp memmber and lock member during movement of said clamp member from its released position to its clamping position to thereby lock the clamp member in its clamping position where it presses down upon the sole adjacent the toe of a ski boot, said spring wire clamp member being compressed during said over-center movement whereby to positively lock the toe of said ski boot in said toe iron while permitting maximum lift of the heel thereof.

3,861,701
SKI-HOLDING AND TRANSPORTING DEVICE

Roomet Aring, Brooklyn, and Dan W. Clark, New York, both of N.Y., assignors to Joyous Designs, Inc., New York, N.Y.

Filed Aug. 16, 1972, Ser. No. 281,056
Int. Cl. A63c 11/02
U.S. Cl. 280—11.37 A 4 Claims



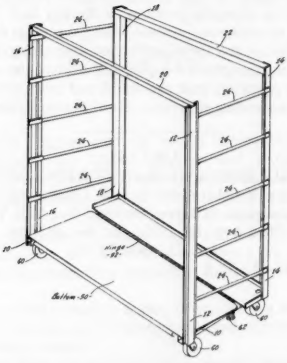
1. A device for facilitating the manual transportation of a pair of skis disposed in outwardly facing opposed mirror relationship, said device comprising a body adapted for attachment to the rear ends of the thus-disposed skis, a roller disposed generally below the body, means journalling the roller on the body, whereby the pair of skis in generally vertical position may be moved along a surface while supported thereon, means for selectively retaining the roller from rotation whereby the pair of skis may be stably supported by engagement between the roller and said surface when propped in generally vertical position, the means journalling the roller being selectively movable from a first position in which the

roller is freely rotatable to a second position, the roller sustaining the weight of the skis in both positions, the means for selectively retaining the roller from rotation comprising means engaged by the roller when it is in the second position to retain the roller from rotation, the means journalling the roller comprising an arm pivoted at one end to the body and at the other end carrying means upon which the roller is journalled, means for limiting the pivoting of the arm when the roller is in its said first position so that the surface of the roller is spaced from the body, in the said second position of the roller at least a portion of its surface engaging the body and being pressed thereagainst by the weight of the skis, means for stably retaining the roller in both of said positions, the body being generally U-shaped in cross-section and being made of elastomeric material, the body having opposed spaced generally parallel legs connected by a central bight, the legs having opposed ski-gripping formations thereon, said formations on the respective legs being spaced apart a distance which is less than the combined thickness of the two juxtaposed rear ends of the skis when the body is in relaxed condition, whereby the legs are resiliently pried apart and the ski-gripping formations firmly grip the outer surfaces of the rear ends of the skis when the device is applied thereto.

3,861,702
TRANSPORT CART

James D. Wilson, Garden Grove, Calif., assignor to Banner Metals, Inc., Compton, Calif.

Filed Nov. 20, 1972, Ser. No. 307,813
Int. Cl. B62b *11/00*
U.S. Cl. 280—33.99 H **6 Claims**



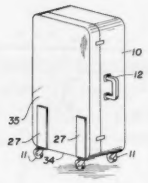
1. A transport cart comprising: a lower frame member; a plurality of casters swivelly suspended from said bottom frame member about respective vertical swivel axes; a bottom mounted on said lower frame member and having a hinged section adapted to be turned to a down position and to an up position; pin means positioned on said lower frame to be engaged by said bottom and being moved thereby into engagement with at least one of said casters to lock said caster in a pre-determined angular position with respect to its vetical swivel axis when the bottom is in its down position.

3,861,703
LUGGAGE CARRIER

Lillian Gould, 100 Beekman St., New York, N.Y. 10038

Filed Apr. 23, 1973, Ser. No. 353,756
Int. Cl. A45c *13/38;* **B62b** *3/02*
U.S. Cl. 280—47.13 R **4 Claims**

1. Caster wheel assembly capable of attachment or detachment from a container as required, said caster wheel assembly having a plate, sections of attachable tape mounted on the bottom and adjacent sides of the container and on the plate surface, the exposed surfaces of such tapes being shaped with projections which mate with each other thereby to effect the binding of the caster wheel assembly plate to the attachable tape on the bottom of the container when the said exposed mating surfaces of attachable tape are engaged together, said

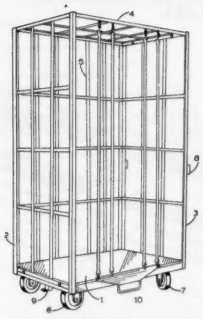


caster plate being formed with an open slot adjacent each end thereof so as to form a hook section at each end of the plate, a pair of sections of attachable tape each having a loop at one end thereof of such size to fit over a respective hook section when such tapes are fastened to the mating attachable tapes mounted on the respective sides of the container.

3,861,704
STANDARD BULK CART

Raymond E. De Witte, Purchase, N.Y., assignor to The Coca-Cola Co., Atlanta, Ga.

Filed Oct. 15, 1973, Ser. No. 406,451
Int. Cl. B62d *53/06*
U.S. Cl. 280—79.3 **9 Claims**



1. A standard bulk cart adapted for transporting stacked product from a production facility to a retail outlet and either displaying said products or collecting returnable empty packages at the retail outlet, including the combination of a cargo bed, a back panel, a top panel, a pair of end panels and a plurality of castors and being bounded on the back side by said back panel, on the top side by said top panel and on the end sides by said two end panels, and a removable cluster bar arrangement attached to the top panel of the cart and extending down to the cargo bed so as to enclose the one open front side of the cart, said cluster bar arrangement comprising a series of long straps which are each connected to a spring means at the upper end of said straps and to a single foot plate member at the lower end of said straps, said spring means being attached to the top panel of said cart and said foot plate member locking said removable cluster bar arrangement to the cargo bed, all of said structural elements being releaseably secured together to form a rectangular receptacle bin when assembled, while at the same time defining a cart that may be easily disassembled and the elements stacked in a nested fashion during shipping or storage.

3,861,705
SHIFTING GEAR FOR THE STEERING SYSTEM OF VEHICLE WHEELS

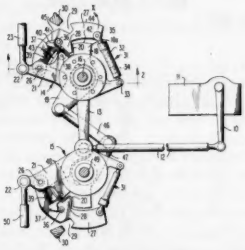
Peter Burchard, Korb, and Adolf Schreiber, Maubach, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Nov. 9, 1971, Ser. No. 196,984

Claims priority, application Germany, Nov. 11, 1970, 2055364

Int. Cl. B62d *7/00*

U.S. Cl. 280—91 **31 Claims**



1. A shifting mechanism for steering systems of vehicle wheel means, which provides a selective uncoupling and coupling of the steering system of the wheel means from and to a steering gear, comprising: a first pivot member operatively connected with the steering gear, a second pivot member connected with a steering linkage means of the wheel means adapted to be uncoupled and coupled, siad first and second pivot members being arranged substantially coaxially to one another, a coupling lever means pivotally supported at said second pivot member, said coupling lever means including coupling means for selectively coupling said first pivot member and locking said second pivot member at a fixed part, said coupling means consisting of at least one claw element provided on said coupling lever means and at least one recess provided on said first pivot member, said claw element and said recess being adapted to be brought into mutual engagement in the radial direction with respect to the axes of said pivot members to couple said first and second pivot members, guide surface means extending approximately circularly about the axis of said pivot members provided on one of said pivot members for guiding said claw element into engagement with said recess to couple said pivot members, the pivot axis of said coupling lever means extending substantially parallel to the axis of said pivot members, and a cylinder-piston-unit acutated by a pressure medium interconnected between said second pivot member and the coupling lever means for the actuation of the latter.

3,861,706
AIR SUSPENSION WITH SADDLE MEMBERS

Rene Gouirand, New York, N.Y., assignor to Joseph Mercadante, Greenwich, Conn.

Continuation of Ser. No. 126,793, March 22, 1971, Pat. No. 3,692,325, which is a continuation-in-part of Ser. Nos. 110,703, , and Ser. No. 111,704, Jan. 28, 1971, Pat. No. 3,689,054. This application Sept. 5, 1972. Ser. No. 286,105

Int. Cl. B60g *5/06*

U.S. Cl. 280—104.5 A **6 Claims**

1. A railroad vehicle suspension system comprising:

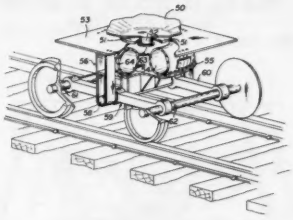
a first upper plate-like member pivotally coupled to said vehicle at a vertical pivot;

a second lower plate-like suspension member;

a doughnut shaped air bag located between said first and second plate-like members with the central axis of said air bag aligned with said pivot;

first and second saddle members coupled to said vehicle adjacent each side of said air bag and fixed relative to said first plate-like member, each saddle member having a substantially vertically oriented slot-like opening therein;

a horizontal pivot shaft extending transverse of said vehicle and fixedly coupled to said lower plate-like suspension member, said pivot shaft being slidably engaged in the



slot-like openings of said saddle members for movement in the vertical direction, said saddle members substantially restraining said pivot shaft against movement in the longitudinal or lateral direction of the vehicle;

first and second rocker arms rotatably coupled adjacent respective ends of said pivot shaft; and

vehicle wheels rotatably coupled to the ends of said rocker arms.

3,861,707
DEFLECTION-SENSITIVE ARRANGEMENTS

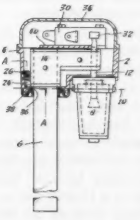
Alan Richard Brine Nash, 39, Abbott's Ride, Farnham, Surrey, England

Filed Feb. 15, 1973, Ser. No. 332,615

Claims priority, application Great Britain, Feb. 18, 1972, 7618/72

Int. Cl. B60g *17/00*

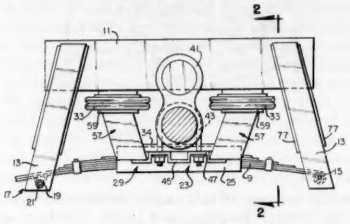
U.S. Cl. 280—124 F **12 Claims**



1. An arrangement for sensing the static deflection of a vehicle axle or road wheel relative to a body or chassis of the vehicle comprising, in combination, first and second members that are respectively attached to the parts of the vehicle between which said deflection is to be sensed, and means interconnecting said members defining a pivot axis about which the members are pivotable relative to each other by said deflection, the first of the members having at least a portion of resilient form that is deformable by said relative pivoting movement, the arrangement further including a damper comprising two elements that are relatively pivotable to exercise a damping function, said pivot of the first and second members providing also the axis of relative pivoting movement of the damper elements, said damper elements being secured one to the first member and the other to the second member whereby to modify the time: displacement response of the relatively pivotable members to changes of said deflection, the first member or at least said resilient portion thereof project-

ing away from the second member to its attaching vehicle part and the damper extending side-by-side with said first member.

3,861,708
HIGH STRENGTH AUXILIARY AXLE SUSPENSION SYSTEM FOR LOW FRAME WHEELED VEHICLES
Raymond L. Fier, Massillon, Ohio, assignor to TWM Manufacturing Company, Inc., Canton, Ohio
Filed Oct. 18, 1973, Ser. No. 407,768
Int. Cl. B60g *11/46*
U.S. Cl. 280—124 F **1 Claim**



1. An auxiliary axle suspension system certifiable for carrying loads greater than about 18,000 lbs./axle and for mounting on a wheeled vehicle having two outer, longitudinally extending inordinately low frame members, the system comprising,

a. an upwardly biased leaf spring for locating substantially directly under each outer frame member and extending in the longitudinal direction thereof, each leaf spring being connected to hanger members which when installed, extend substantially vertically from beneath each outer frame member,

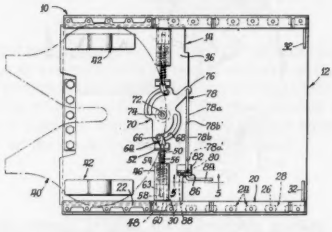
b. a load arm mechanism for each leaf spring comprising a leaf spring retaining means defined by a substantially rectangular three sided longitudinally extending box wherein said horizontal bottom portion comprises the lower side of said box and a pair of vertical walls comprises the two sides of said box, and there is provided at substantially the end portions of each of said vertical walls, upwardly extending arm means which terminate in platform means having located thereon expandable pneumatic chamber means,

c. said load arm mechanism further comprising self-supportive U-bolt retaining means located on and extending outwardly from each of said vertical walls of said leaf spring retaining means and between the arm means of a given vertical wall, said U-bolt retaining means being comprised of two horizontally disposed chambers connected by a single integral flange, said flange defining at least an upper horizontal top for each of said chambers, and each top have located therein an orifice through which the legs of a U-bolt can extend, said U-bolt retaining means being located on the upper portion of said vertical walls such that the lower surfaces of said chambers do not substantially extend into the lower portion of said vertical walls,

d. at least two U-bolt means for each load arm mechanism for connecting an auxiliary axle to said load arm mechanism, said U-bolts having legs of sufficient length to extend through said orifices of said chambers but not below said horizontal bottom portion,

e. each leaf spring being retained at about its center portion by said spring retaining means of said load arm mechanism in a normally upwardly biased position such that wheels attached to the axle are normally held above the road surface when the system is installed, two vertically flexible pneumatic chambers located between each leaf spring and its respective frame member, one pneumatic chamber being supported on each of said platforms, one located forward and one aft of said U-bolt retaining means, said load arm mechanism, when installed, locating said chambers in a spread configuration and said springs substantially directly under the frame member, such that when pneumatic pressure is applied to the chambers they elongate, forcing the axle downwardly against the upward bias of the spring to engage the wheels of the vehicle with the road surface.

3,861,709
SHIFTABLE FIFTH WHEEL CONSTRUCTION
Harry William Mulcahy, Lansing, Ill.; John Allan Kent, Rolling Prarie, and Francis Eli Madura, Whiting, both of Ind., assignors to Amsted Ind., Inc., Chicago, Ill.
Filed July 12, 1973, Ser. No. 378,560
Int. Cl. B62d *53/06*
U.S. Cl. 280—407 **5 Claims**



1. A shiftable fifth wheel construction comprising,

a tractor frame unit including a body member and a pair of side rails forming opposed longitudinal channels,

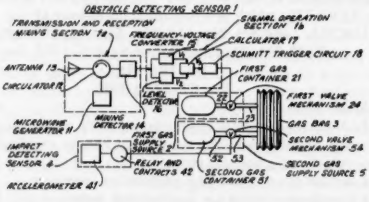
a saddle unit mounted on the frame unit with its opposed longitudinal edges within said opposed longitudinal channels for longitudinal sliding movement on said frame unit, the side rails each including a plurality of separate spacer elements having confronting surfaces defining a series of longitudinally spaced sockets directed laterally inwardly toward those of the opposite side rail, and the sockets in the two side rails being equally spaced longitudinally and respectively aligned transversely,

the saddle unit including locking elements slidable transversely within said channels into and out of aligned ones of the sockets,

means yieldingly biasing the locking elements outwardly into the sockets and

common means for moving the locking elements transversely inwardly and thereby withdrawing them from the sockets.

3,861,710
VEHICLE SAFETY SYSTEM
Masanobu Okubo, Kobe, Japan, assignor to Fujitsu Ten Ltd., Kobe, Japan
Filed Nov. 20, 1972, Ser. No. 308,045
Claims priority, application Japan, Nov. 22, 1971, 46-93792
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **1 Claim**



1. A vehicle safety system for protecting a person in a vehi-

cle from the shock of impact in a collision with an obstacle, said vehicle safety system comprising

a gas bag in the vehicle adjacent the person;

a gas supply source comprising a first gas supply source having a predetermined volume of gas to partially inflate the gas bag and a second gas supply source having a sufficient volume of gas to fully inflate the partially inflated gas bag;

a first gas supply path coupling the first gas supply source to the gas bag;

first valve means in the first gas supply path for controlling the flow of gas from the first gas supply source through the first gas supply path, the first valve means normally preventing the flow of gas;

a second gas supply path coupling the second gas supply source to the gas bag;

second valve means in the second gas supply path for controlling the flow of gas from the second gas supply source through the second gas supply path, the second valve means normally preventing the flow of gas;

obstacle detecting sensor means at the front of the vehicle electrically connected to the first valve means for producing collision prediction signals when an obstacle is in the path of the vehicle, the collision prediction signals being transmitted to the first valve means and opening the first valve means to partially inflate the gas bag; and

impact detecting sensor means at the front of the vehicle electrically connected to the second valve means for producing impact operation signals when the vehicle is in collision, the impact operation signals being transmitted to the second valve means and opening the second valve means to fully inflate the gas bag, the gas bag being fully inflated by the opening of the second valve means after the opening of the first valve means.

3,861,711

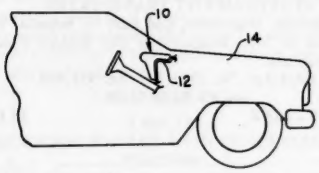
ENERGY ABSORBING CRASH PANEL

Samuel M. Terry, and Walter V. Slominski, both of Ann Arbor, Mich., assignors to Hoover Ball and Bearing Co., Saline, Mich.

Filed Nov. 27, 1972, Ser. No. 309,675

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 B **5 Claims**



1. An energy absorbing panel assembly for mounting on a rigid member comprising a skeletal frame, a foam body molded over said frame, said frame comprising end brackets, spaced lateral members extending between said end brackets, said frame including intermediate resilient members extending between and attached to said lateral members so that said lateral members are resiliently retained in a spaced relationship, said intermediate members being constructed for collapsing movement in response to the application of an impact force to said body.

3,861,712

APPARATUS FOR DEFLATING AN INFLATABLE OCCUPANT RESTRAINT DEVICE

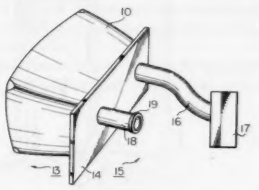
Shunji Matsui; Yoshikazu Hayakawa, and Kenzo Hirashima, all of Yokohama, Japan, assignors to Nissan Motor Company, Ltd.

Filed Aug. 4, 1971, Ser. No. 168,819

Claims priority, application Japan, Dec. 28, 1970, 45-119425; Dec. 28, 1970, 45-132109

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **2 Claims**



1. In a motor vehicle safety device having an inflatable confinement which is normally stored in a folded condition and is inflatable to a protective condition by a vaporized gas upon triggering said safety device in response to a sudden impact, in which pressure in the interior of the inflated confinement reaches a first peak value at the time of triggering the safety device while reaching a second peak value at a predetermined time after triggering the safety device, substantially at which a vehicle occupant crashes against the inflated confinement: apparatus for exhausting the fluid from the confinement comprising: an exhaust duct communicating with said confinement to gradually discharge the vaporized gas from the inflated confinement; a closure member removably secured to an outlet of said exhaust duct for closing same and preventing exhausting of said vaporized gas during inflation of said confinement; means for removing said closure member away from said outlet to open said exhaust duct at said given time after triggering said safety device so as to deflate the confinement simultaneously as the vehicle occupant bumps against the inflated confinement; a bolt and nut securing said closure member to said outlet at one point and a pin disposed at another point circumferentially spaced from said bolt; said means for removing comprising an electrically actuable detonation element provided in said bolt and explosible in response to triggering of said safety device, and said detonation element including explosion delaying means for delaying the time of explosion of said detonation element until said predetermined time.

3,861,713

RETRACTILE DOOR STEP FOR MOTOR HOMES

Dale P. McKee, 204 White St., Salisbury, Md. 91801

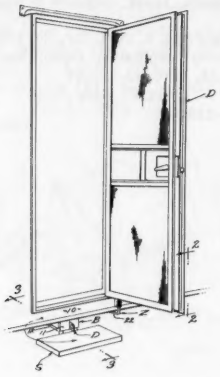
Filed Jan. 23, 1974, Ser. No. 435,847

Int. Cl. B60r *3/02*

U.S. Cl. 280—166 **17 Claims**

1. An extensible step for a door and retractible beneath the door sill and operated by opening and closing of said door, and including; a bracket having a depending face plate secured to the door sill and a horizontally disposed mounting plate extending inwardly therefrom beneath the sill, the door step being horizontally journaled to swing beneath the mounting plate upon a vertical shaft and between a retracted position inward of the door sill and an extended position outward thereof, a support gear fixed to said shaft and operable between said retracted and extended positions, a larger drive gear journaled upon the mounting plate and intermeshed with the support gear and operable at substantially less angular displacement, and lever means connected between the first

mentioned door and said drive gear to displace the latter and support gear and step in response to opening and closing of



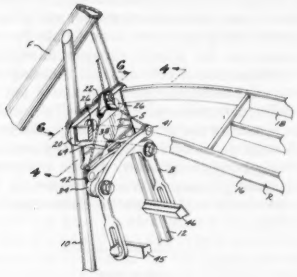
said door to effect a corresponding extension and retraction thereof.

3,861,714

BICYCLE RACK SUPPORT

Thomas K. Evans, 4521 Graywood, Long Beach, Calif. 90808, and Russell E. Broeker, 5383 Ocana Ave., Lakewood, Calif. 90713

Filed Apr. 4, 1974, Ser. No. 457,929
Int. Cl. B62j *23/00, 7/04*
U.S. Cl. 280—202 **4 Claims**



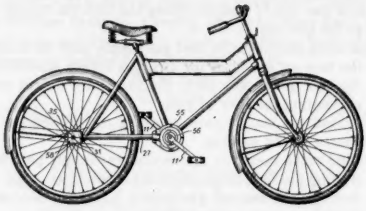
1. In the combination that includes a bicycle frame having a pair of posts connected by a horizontal bar, a rack extending rearwardly from said posts and having a pair of generally horizontal legs rigidly interconnected at their front ends by a crosspiece; a clamp plate securing the front ends of said arms to said posts, a pair of bolts connecting said crosspiece to said clamp plate, a rear brake unit that includes a yoke connected at its mid-portion affixed to a boss carried by said bar, and a brake cable bridle having a pair of sections normally extending downwardly and outwardly immediately below the front portion of said legs, a spacer plate formed at its upper portion with a pair of apertures that receive said bolts so as to be secured to said frame with the bottom of said plate resting upon said boss, said spacer plate being dimensioned so as to positively maintain the front portion of said legs above said brake cable bridle elements.

3,861,715

DIRECT TRANSMISSION SYSTEM FOR BICYCLES

Hector Mendoza, Adolqo Prieto No. 1709, Mexico City, Mexico

Filed Aug. 13, 1973, Ser. No. 387,856
Claims priority, application Mexico, June 21, 1973, 144385
Int. Cl. B62m *1/02*
U.S. Cl. 280—260 **11 Claims**



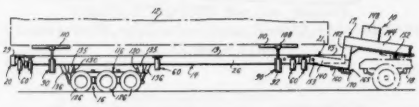
1. A direct transmission system for a bicycle, which bicycle comprises wheels, a central axle and a frame constituted by an inclined tube, a vertical tube and tubes forming forks for supporting said wheels, said forks corresponding to an upper back fork, a lower back fork and a front fork; said direct transmission system comprising a cylindrical axle corresponding to the bicyles's central axle; pedals fixed at the ends of said cylindrical axle; a crown wheel threadedly fixed to an end portion of said cylindrical axle; a shaft coupled to said cylindrical axle; conical gears fixed at the ends of said shaft, being one of said conical gears, called pinion, indented to said crown wheel; free wheel means coupled to the other of said conical gears fixed to said shaft; housing means for covering said cylindrical axle; said crown wheel, said shaft, and said conical axle, fixing means for correspondingly fastening said cylindrical axle, and said shaft to said housing means which comprises pressure bushings including ends, one of said ends protruding from said supporting tube, same including recesses; balls housed in said recesses and wherein a washer is comprised in that end of said cylindrical axle including the crown wheel, said washer being located between said crown wheel and the corresponding one of said pressure bushings; and wherein a nut is threadedly fixed to the other end of said cylindrical axle, said nut being located registering with the corresponding other of said pressure bushings.

3,861,716

PLATFORM LIFT TRANSPORTER

Bobby G. Baxter, Warrenton, and Earl W. Schmitt, Wright City, both of Mo., assignors to The Binkley Company, Warrenton, Mo.

Filed Apr. 30, 1973, Ser. No. 355,980
Int. Cl. B62d *53/06*
U.S. Cl. 280—423 R **17 Claims**



1. An adjustable transporter comprising a platform, a wheel bogie, means for supporting the rear end of the platform on the wheel bogie, said supporting means comprising sliding guide means restricting both transverse and longitudinal movement of the platform relative to the bogie and allowing movement of the platform relative to the wheel bogie in the generally vertical direction, and means for connecting the platform to the bogie, said connecting means providing generally vertical adjustment of the platform relative to the bogie in a selected manner and providing a rigid connection against vertical movement of the platform relative to the bogie for

each selected position of vertical adjustment, the transporter further comprising means for connecting the front end of the transporter to a towing vehicle for towing the transporter.

3,861,717
SWAY CONTROL FOR TOWED VEHICLES HAVING VARIABLE CONTROL FEATURE

Howard W. Knox, 8713 Rushmore Dr., Knoxville, Tenn. 37919

Filed Oct. 1, 1973, Ser. No. 402,359
Int. Cl. B60d *1/06*
U.S. Cl. 280—446 B **8 Claims**

1. In combination with a tow vehicle having a longitudinal axis aligned with the normal direction of forward motion thereof and a trailer having a longitudinal axis aligned with the normal direction of forward motion thereof which is connected to the tow vehicle for towing employing a hitch providing for pivotal movement of said trailer relative to said tow vehicle about an upright axis coincident with said hitch, the improvement comprising

means interconnecting said tow vehicle and said trailer on each of the opposite sides of said hitch, said means including a first elongated section defining a bore and having one of its ends anchored to said trailer at a location disposed on one side of an imaginary line extending substantially parallel to said longitudinal axes of said tow vehicle and said trailer and passing through said hitch, a second elongated section, telescopically received in said first section, one end of said second section being pivotally anchored to said tow vehicle at a location laterally of said hitch and on the same side of said imaginary line as said anchored end of said first section,

friction means disposed within said bore of said first section and about a substantial portion of the circumference of that part of said second section received in said bore,

expandable diaphragm means adapted to urge said friction means toward the outer wall of said second section to increase the resistance of telescopic movement between said first and second sections, and

means disposed in said tow vehicle remotely from said expandable diaphragm means and adapted to controllably expand said expandable means for selecting the degree of resistance to telescopic movement between said first and second sections.

3,861,718
CHECKBOOK WALLET WITH CONCEALMENT FEATURE

Leo H. Strus, 5301 E. County Line, White Bear Lake, Minn. 55110

Filed May 4, 1973, Ser. No. 357,489
Int. Cl. B42d *3/15*
U.S. Cl. 281—17 **5 Claims**

1. A concealment-feature checkbook wallet ofor containing a pad of checks and a check register, the register having a plurality of pages each imprinted with a description column and a balance-deposit column comprising:

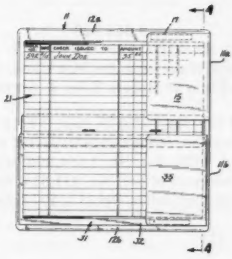
a. First and second cover panels, said panels hingedly connected along one edge to form a booklet which has open and closed positions, each of said panels having an inner and an outer face, said inner faces being positioned adjacent one another when said cover panels are in a closed position;

b. First attachment means for removably attaching the check register to the inner face of said first cover panel so that the check register is positioned between said cover panels when in their closed position;

c. Second attachment means for removably attaching the checkpad to the inner face of said second cover panel so that the checkpad is positioned between said cover panels when in their closed position;

d. A first opaque concealment flap attached to one edge of said first cover panel and overlying a portion of the inner surface of said first cover panel in its biased position, said first flap pivotable from a biased first position wherein it covers only the balance-deposit column of one page of the check register for purposes of shielding that column from view, to a second folded position wherein the balance-deposit column is visible for purposes of making a balance entry or reading;

e. A second opaque concealment flap overlying a portion of the inner surface of said second cover panel in its biased



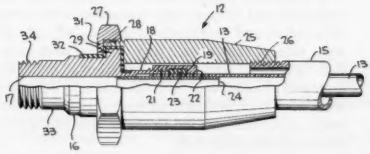
position, said second flap pivotable from a biased first position wherein it covers only the balance-deposit column of a second page of the check register for purposes of shielding that column from view, to a second folded position wherein a balance-deposit column is visible for purposes of making a balance entry or reading; and

f. Third attachment means for removably attaching said second concealment flap to the check register so that the checkpad is exposed for purposes of drafting a check, said third attachment means comprising two pocket panels joined at three edges to form a pocket which removably fits over a portion of the check register to secure said panels to said first cover panel by means of the check register: and said concealment flap being attached to one edge of said pocket panels and overlies a portion of said pocket panels in its biased position with the checkpad being exposed for purposes of drafting a check.

3,861,719
TRANSITION PIPE FITTING

James D. Hand, 345 Kepner Dr., Fort Walton Beach, Fla. 32548

Filed May 9, 1973, Ser. No. 358,542
Int. Cl. F16l *11/12*
U.S. Cl. 285—47 **2 Claims**



1. A pipe fitting for interconnecting concentric pipes together to a gas meter unit, comprising: a coupling nut having an axial cylindrical bore therein; a first non-metallic and flexible pipe of a given diameter serving as a gas conduit engaged at one end thereof with one end of said coupling nut; the wall

of said bore of said nut being axially aligned with the inner wall of said first pipe; a stiffener sleeve element being in frictional engagement with said inner walls; a portion of the diameter of said wall of said coupling nut bore at said one end thereof being equal to the outer diameter of said first pipe; a sealing bushing surrounding said first pipe and being threadedly engaged with said coupling nut, and an elastic sealing ring disposed between said bushing and said first pipe to effect a sealing engagement thereat as said bushing is tightened; a second metallic pipe of a diameter larger than that of said first pipe and encasing same as a protective casing over at least a portion of the length of said first pipe; a coupling sleeve surrounding said engaged pipe and said coupling nut, said sleeve coupling together one end of said second pipe with said nut; and insulation means disposed between said coupling sleeve and said nut for insulating said second pipe from any stray electric currents coming from the direction of the gas meter unit.

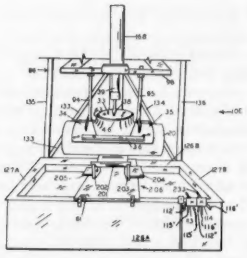
3,861,720
PLASTIC PIPE PRODUCT

Frank J. Rogers, Waka, and Joe Mac Close, Spearman, both of Tex., assignors to Rogers Sales & Service, Inc., Waka, Tex.

Division of Ser. No. 180,023, Sept. 13, 1971, Pat. No. 3,758,255, which is a continuation-in-part of Ser. No. 55,113, July 15, 1970, Pat. No. 3,654,008, which is a continuation-in-part of Ser. No. 831,814, May 22, 1969, abandoned. This application Dec. 13, 1972, Ser. No. 314,683

Int. Cl. F16l *41/00*

U.S. Cl. 285—156 **4 Claims**



1. A plastic connector comprising a conduit portion and a stem portion,

A. said conduit portion comprising

a. a cylindrical wall extending parallel to the central cylindrical axis thereof from a front end to a rear end thereof, and

b. a sput portion extending outwardly and stretched outwardly from said cylindrical wall and integral therewith and comprising

i. an orifice on the outer end of said sput portion, and

ii. a transition wall between said cylindrical conduit wall and said orifice, said transition wall extending forward of and rearwards of and to left side of and right side of said orifice and integral with said conduit cylindrical wall, said transition wall being curved concavely outward at its front and rear ends and the front and rear portions of said transition wall also being stretched parallel to the length of the conduit portion cylindrical wall,

B. said stem portion comprising a cylindrical body portion and a flange portion, said body portion of said stem portion having a central longitudinal cylindrical axis and said cylindrical wall of said conduit portion having a central cylindrical axis which intersects an extension of the said axis of said body portion of said stem portion,

the said transition wall of the conduit portion at the sides of said orifice in said sput portion being stretched in a direction parallel to the plane defined by intersection of said axis of said cylindrical conduit wall and the central longitudinal axis of the body portion of said stem portion,

c. said flange portion of said stem portion comprising a rear lip component, a front lip component, a left side lip component and a right side lip component firmly attached to each other, the front and rear lip components extending, respectively, frontward and rearward of said orifice parallel to the length of said conduit portion and composed of material stretched transversely to the length of the conduit portion in a direction perpendicular to the plane formed by the intersection of the central cylindrical axis of the conduit wall and central longitudinal axis of the body portion of said stem portion, and

said left and right lip components of said flange portion are stretched in a direction parallel to the central longitudinal axis of said cylindrical wall of said conduit portion,

said left lip component and right lip component each extending transversely to the central longitudinal axis of the conduit wall to a lower edge of said stem portion and each such component having an inwardly concave surface,

D. said orifice of said sput portion and the front and rear edges of said flange lip components and the lower edges of said stem flange portion side lip components defining the limits of a zone of contact, and

e. said flange portion of said stem portion circumscribing said orifice and extending beyond said orifice of said sput portion and the front and rear lip components of said flange portion having inwardly convex curved portions and the left and right side components of said flange portion having inwardly concave curved portions, and

F. said sput portion having adjacent said orifice a plurality of differently shaped exterior curved surface portions all of which contact and are firmly attached to and exactly match the interior curved surfaces of said stem portions at all points in said zone of contact

G. with portions of said conduit portion cylindrical wall spaced away from said zone of contact having a greater resiliency than the portions of said wall at said zone of contact where said lip components of said stem portion and the adjacent curved transition portions of the conduit portion are firmly joined together.

3,861,721
PIPE EXPANSION JOINT

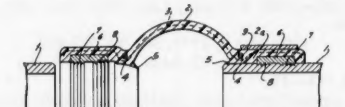
Hans Berghofer, Alte Landstrasse 274, Hamburg, Germany

Filed May 23, 1973, Ser. No. 363,047

Claims priority, application Germany, May 24, 1972, 222515

Int. Cl. F16l *21/00*

U.S. Cl. 285—236 **11 Claims**



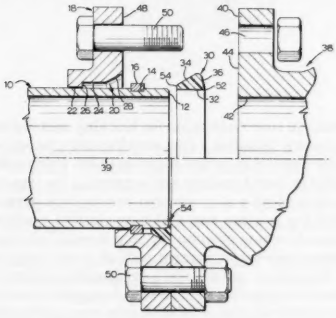
1. A coupler for joining of pipes, comprising an annular member of elastomeric material having a central passage and including a main portion and a tubular end portion which is to fittingly receive a pipe end; an axially slotted sleeve of metallic material accommodated in and fast with said end portion, said

sleeve having inwardly directed mutually oppositely inclined teeth adapted to bite into the pipe end; a sealing lip extending radially and axially inwardly at the region of a juncture between said main portion and said end portion; a reinforcement ring embedded in said member in said region adjacent said sealing lip; and clamping means surrounding said end portion for sealingly pressing the same against a pipe end accommodated in said end portion.

3,861,722
FLANGE ADAPTOR

Stewart S. Kenyon, Edmonton, Alberta, Canada, assignor to Coupco Limited, Toronto, Ontario, Canada

Filed Sept. 7, 1973, Ser. No. 394,968
Claims priority, application Canada, July 31, 1973, 177698
Int. Cl. F16l *17/00*
U.S. Cl. 285—337 **10 Claims**



1. In combination:

a pipe having a peripheral external groove adjacent to but spaced from an end of the pipe,

a retaining ring in said groove, dimensioned to project beyond said groove,

an annular adaptor having an interior profile which includes a first portion snugly but slidably receivable over said pipe, a substantially cylindrical second portion dimensioned to receive the retaining ring snugly but slidably, a step between said first and second portions, and a third portion adjacent said second portion and diverging from said second portion in the direction remote from said first portion,

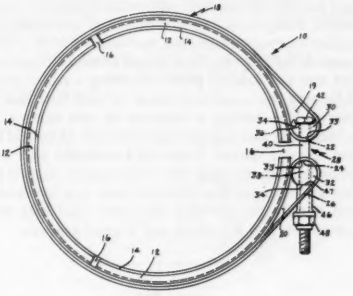
and an annular gasket of resilient material, the gasket having a substantially cylindrical inner face, a diverging outer face substantially complementary to said third portion of the annular adaptor, and an end face spanning between said inner and outer faces remote from said retaining ring, the axial extent of the inner face being greater than the axial extent of said third portion of the annular adaptor.

3,861,723
V-BAND COUPLING

Willis H. Kunz, Chesterfield, and Paul R. Hildebrandt, Ballwin, both of Mo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 28, 1973, Ser. No. 392,386
Int. Cl. F16l *23/00*
U.S. Cl. 285—410 **1 Claim**

1. A coupling for joining the abutting ends of cylindrically shaped members comprising at least one retainer element surrounding the ends of said cylindrically shaped members, means attached to and surrounding said retainer element for forcing said retainer element into clamping engagement about said cylindrically shaped members, said clamping means being formed of a continuous band of flexible material having a pair of loops therein and a locking member located within said loops for fixedly securing said clamping means about said cylindrically shaped members, said locking member being made up of a pair of saddle blocks, each of said saddle blocks being of a cylindrical configuration on one side thereof, having a surface of a predetermined configuration on the other side thereof and having a centrally located opening therethrough, one of said saddle blocks located in each of said loops of said clamping means, said clamping means having a

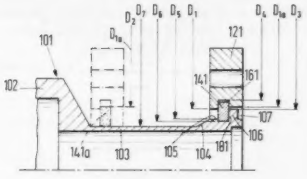


first aperture in one loop thereof and second and third apertures in the other loop thereof, a bolt having a head with an undersurface conformed to said preselected configuration at one end thereof passing through said opening in said saddle blocks and said apertures in said clamping means, the remainder of said continuous band of material being completely solid thereby enabling said one loop to uninterruptingly encircle said bolt head, securing means located at the other end of said bolt, and a sleeve interposed between one of said saddle blocks and said securing means.

3,861,724
DEVICE FOR THE ROTARY AXIALLY FIXED CONNECTION OF TWO CONCENTRIC COMPONENTS

Georg Spinner, Erzgiessereistr. 33, 8 Munich 2, Germany

Filed Mar. 6, 1973, Ser. No. 338,451
Claims priority, application Germany, Mar. 9, 1972, 2211451
Int. Cl. F16l *23/00*
U.S. Cl. 285—415 **11 Claims**



1. A device for axially fixedly connecting, while permitting relative rotation, of a first tubular shaped component and of a second hollow clamping component that is surrounding said first component, said device comprising:

said first component having a first annular groove thereabout; said first groove facing toward said second component; said second component having a second annular groove therein, said second groove facing toward said first component; said grooves being alignable and facing toward each other upon insertion of said first component into said second component;

said first component having a front end which is the end to be fixedly connected and having a rear end away from said front end;

a selected one of said first and said second grooves being more open on its side toward said first component rear end than it is on its said side toward said first component front end, in that the said selected groove is defined by a front wall on its said front side and by rear wall on its said rear side; said rear wall being shorter in height than said front wall;

adjacent to said rear wall, its respective said device component having a broadened part which gradually changes in height, being tallest at said rear wall and being shorter further rearward from said rear wall;

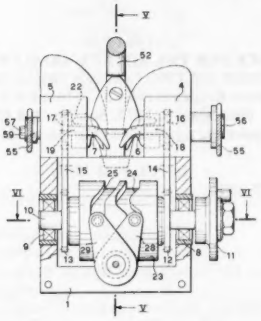
an annular holding ring held in and extending between said first and said second grooves, having a radial height approaching the combined depth of said first and second grooves and having a diameter at that surface of said holding ring that engages said rear wall when said holding ring is being moved from said broadened part into said grooves, such that said rear wall projects slightly beyond that said ring surface, whereby said ring is pressed over said broadened part and then over said rear wall and moves into and is held in said aligned grooves.

3,861,725

AUTOMATIC KNOT-FORMING MACHINE FOR THE FORMATION OF THE FISHER'S KNOT

Pietro Messa, Salo, Italy, assignor to Mesdan di Messa Pietro, Salo (Brescia), Italy

Filed June 5, 1974, Ser. No. 476,721
Claims priority, application Italy, June 8, 1973, 50605/73
Int. Cl. A01d *59/04*
U.S. Cl. 289—2 **5 Claims**



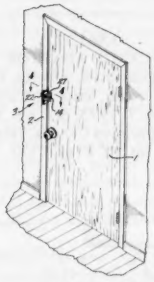
1. An automatic knot-making machine for the formation of the fisher's knot, more particularly intended to be mounted on an automatic spooler, comprising locking members for the threads to be knotted, crossing members and tensioning members for the threads and confrontingly mounted rotary hooks equipped with shears for severing the threads and holding the tails thereof, said crossing members being driven by a cam keyed to a driving shaft to perform oscillatory movements, characterized in that adjustable means are provided for modifying the width of the oscillatory movements of the crossing members with respect to the width as impressed by said cam.

3,861,726

ABUTMENT SWIVEL DOORSTOP

Lyall A. McLennan, 2896 Trinity St., Vancouver 6, B.C., Canada

Filed Mar. 26, 1973, Ser. No. 345,061
Int. Cl. E05c *5/00*
U.S. Cl. 292—67 **14 Claims**



1. In abutment stop mechanism for blocking opening movement of a closure including a stop member and a mount separate from the closure, mounted adjacent to but independently of the closure in closed position and supporting the stop member for turning about a stop member turning axis between a closure-blocking position and a closure-clearing position, in which closure-blocking position the stop member obstructs a predetermined opening-movement path of a stop-engageable portion of the closure and a closure-engageable portion of the stop member is engageable by such stop-engageable portion of the closure to limit movement of such stop-engageable portion along such predetermined opening-movement path, and in which closure-clearing position the stop member is out of the opening-movement path of the stop-engageable portion of the closure, the closure-engageable portion of the stop member being located a substantial distance from the stop member turning axis, the improvement comprising the mount being mounted with the stop member turning axis substantially perpendicular to and offset slightly from such predetermined opening-movement path of the stop-engageable portion of the closure and located so that a line joining such stop member turning axis and the closure-engageable portion of the stop member in closure-blocking position is at an angle to such predetermined opening-movement path of the stop-engageable portion of the closure of less than 45° so that pressure of the stop-engageable portion of the closure on the stop member will exert on the stop member a compressive force toward the stop member turning axis greater than the stop member swinging force acting perpendicular to a line joining the stop member turning axis and the stop-engageable portion of the closure when the closure is in its position closest to the stop member turning axis.

3,861,727

ELECTRICALLY RELEASED STRIKE

Carl Froerup, Glendale, and Russell L. Mitchell, Burbank, both of Calif., assignors to Adams Rite Manufacturing Company, Glendale, Calif.

Filed Mar. 12, 1973, Ser. No. 340,235
Int. Cl. E05c *3/12*
U.S. Cl. 292—341.16 **9 Claims**

1. An electric release strike, comprising:

a. a case including a strike plate having an opening therein;

b. a strike bolt pivotally swingable to a position projecting through said opening and to a retracted position;

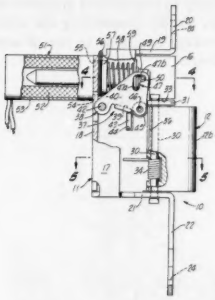
c. means normally urging said bolt towards its projecting position;

d. latch means pivoted at one side within the casing for swinging movement to latching and non-latching posi-

tions relative to said bolt, said strike bolt and said latch means having pivoted axes oriented in right-angled relation and said latch means having an opposite side normally positioned in the path of swinging movement of the strike bolt from its projecting position to its retracted position, swinging movement of the latch means to its non-latching position being operative to move said opposite side thereof out of said path of swinging movement of said strike bolt and enable movement of the bolt to said retracted position against the action of said urging means;

e. actuating means electrically energizable to swingably move said latch means to said nonlatching position including a movable member connected with said latch means; and

f. means normally dead-locking said latch means against movement away from its latching position.



3,861,728

BUMPER FOR MOTOR VEHICLES

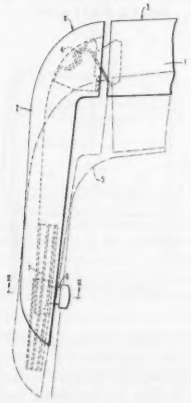
Fritz Haberle, Sindelfingen; Daniel Riechers, Calw-Heumaden; Walter Munsinger, Boblingen, and Horst Kleiner, Stuttgart, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Aug. 28, 1973, Ser. No. 392,304

Claims priority, application Germany, Aug. 30, 1972, 2242666

Int. Cl. B60r *19/04, 19/08*

U.S. Cl. 293—62 **10 Claims**



1. A bumper for motor vehicles which is displaced in case of an impact and which includes a center section and lateral bent-around end portions extending approximately parallel to the outer surface of the body, characterized in that the end portions are movably connected with the center section and are substantially longitudinally displaceably guided at a distance from the body by a guide means, and in that said guide means include a spacer means projecting from the body which spacer means engages in a guide rail means mounted on the inside of each bumper end portion, and further characterized in that the connection between the end portions and the center section takes place by bent spring means.

3,861,729

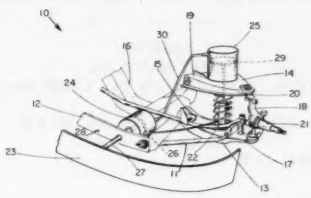
VEHICLE SHOCK ABSORBER

Oscar Stanley Williams, Arlington, Ind., assignor to Philip H. Willkie, Rushville, Md., a part interest

Filed Oct. 30, 1972, Ser. No. 301,882

Int. Cl. B60r *19/06*

U.S. Cl. 293—68 **9 Claims**



1. In combination with a vehicle which includes a main frame, a vehicle body mounted on said frame, a wheel supporting device connected to said frame, a coil spring with one end mounted to said device and an opposite end cushily supporting said body with respect to said device, and a bumper mounted to said vehicle, wherein the improvement comprises: a first means connected to said bumper, said body and said spring being operable when said bumper is impacted to translate horizontal force through said bumper into downward force compressing said spring and upward force lifting said body;

said first means includes fluid cushion means having a fluid output line, said first means further includes lifting means connected to said line being operable to lift said body upon receipt of pressurized fluid from said line, said cushion means being connected to said bumper and operable to force pressurized fluid out through said line into said lifting means to lift said body when said bumper moves toward said frame upon impact.

3,861,730

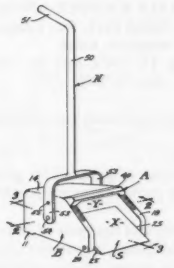
COLLECTOR-COMPACTOR FOR HAIR AND THE LIKE

Joseph J. Ringo, 11109 E. Lynrose, Arcadia, Calif. 91006

Filed May 21, 1973, Ser. No. 362,415

Int. Cl. A47l *13/08*

U.S. Cl. 294—1 R **8 Claims**



1. A debris collector and compactor for disposing of compressible cuttings of hair and the like, and including; a body

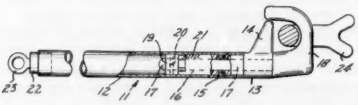
having bottom, back, top, and opposite side walls with the front thereof open forward of a transverse vertical mid-plane of the body, a scoop for directing debris into a compaction chamber located in the body rearward of said mid-plane and comprised of a panel extending between the side walls of the body and inclined from a foremost floor engaging edge to a transverse rearmost edge at said mid-plane, a normally retracted forwardly moveable compactor pivoted to the body on a transverse axis disposed horizontally beneath the top thereof and comprised of a panel with a lower edge extending between the side walls and shiftable toward the said mid-plane, the bottom interior of the body being cylindrically concaved about said axis as it extends rearward of said mid-plane to slideably engage the lower edge of the compactor, and actuating means to force the compactor toward said mid-plane for compaction of debris from said compaction chamber rearward of said mid-plane and into a storage chamber defined beneath the scoop and located forward of said mid-plane.

3,861,731

BOAT HANDLER

Jay De Young, 16383 Mercury Dr., Grand Haven, Mich. 49417

Filed Aug. 27, 1973, Ser. No. 391,674
Int. Cl. B63b *21/54*
U.S. Cl. 294—19 R **5 Claims**



1. A boat handler device comprising:
a tubular handle;
a sleeve element fixedly and coaxially secured in one end of said tubular handle and having a radially extending anvil portion;
a hook element having a shaft extension running coaxially through said sleeve element and rotationally movable in said sleeve to selectively close on said anvil portion of said sleeve;
a stop block secured to the end of said shaft extension for rotation therewith and bearing against said sleeve in prevention of withdrawal of said hook element from said sleeve and limiting rotation of said hook in relation to said sleeve element; and
detent means intermediate said sleeve and said stop block parallel to the axis of said sleeve and providing one or more selected stop positions for said hook rotation.

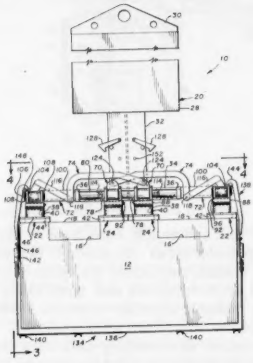
3,861,732

ADJUSTABLE GRIPPER APPARATUS

John Charles Piper, Bethel Park, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 11, 1974, Ser. No. 432,705
Int. Cl. B66c *1/02*
U.S. Cl. 294—65 **8 Claims**

1. A gripping apparatus having adjustable gripping positions comprising:
a frame assembly;
a first and second pair of grippers for gripping objects;
laterally extending guide means supported from said frame assembly;
means for mounting said first pair of grippers on said guide means for lateral sliding movement therealong;
a pair of oppositely spaced gripper positioning members;
means for each of said gripper positioning members for pivotably mounting said gripper positioning members to said frame assembly to rotate about independent pivot axes extending perpendicular to said lateral direction of said guide means;
gripper mounting means for each of said grippers of said second pair for mounting each of said grippers on one of said gripper positioning members at a location remote from its pivot axis;
a pair of articulating linkage assemblies each of which has at least one joint;
means for pivotally connecting one end of each articulating linkage assembly to one of said grippers of said first pair and means for fixedly connecting the other end of each articulating linkage assembly to one of said gripper positioning members;



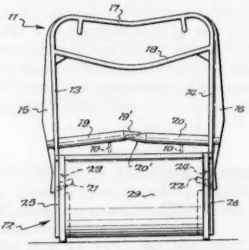
said joint of each of said articulating linkage assemblies being offset from said pivot axis of its associated gripper positioning member whereby rotation of one of said gripper positioning members causes said gripper of said first pair associated therewith to slide along said guide means to change the gripping position thereof.

3,861,733

SILICON SEMI-CONDUCTOR WAFER CONSTRAINT

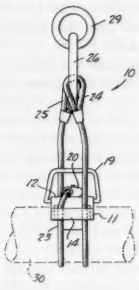
John E. Vander Mey, Stirling, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed May 21, 1973, Ser. No. 362,634
Int. Cl. A47j *45/07*
U.S. Cl. 294—33 **8 Claims**



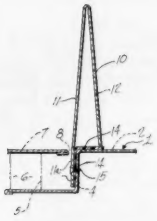
1. A handle and retainer for engagement with a carrier for an article, said handle and retainer comprising at least two legs, means for changing the distance between the lower portion of said legs, means for engaging and disengaging the carrier which engaging and disengaging means operates upon the change in distance between the lower portion of the legs and at least one retaining bar for retaining the article in the carrier, which retaining bar is connected by one end to one of the legs, the other end of said retaining bar being unsecured.

3,861,734
TUBULAR SAFETY PICK-UP SLING
Harlan C. Welch, deceased, late of Jennings, La. (by Emelie Legros Welch, possesor), assignor to Maxine Welch and Harlan Welch, part interest to each
Filed June 5, 1973, Ser. No. 367,172
Int. Cl. B66c 1/12
U.S. Cl. 294—74 4 Claims



1. A safety pick-up sling for handling tubular objects comprising a saddle having a central arcuate portion for engaging the tubular objects, a cable clamp secured to the top of said saddle, a cable releasably secured intermediate its opposite ends to said cable clamp on said saddle and adapted to encompass a tubular object engaged against said saddle, and means attached to opposite ends of said cable for tightening said cable against a tubular object and the saddle for lifting the tubular object.

3,861,735
READILY ATTACHABLE ACCESSORY FINS FOR AUTOMOBILE BODIES
Don A. Taylor, Box No. 4, Wadsworth, Ohio 44281
Filed Mar. 22, 1973, Ser. No. 343,647
Int. Cl. B60j 1/20
U.S. Cl. 296—1 S 13 Claims



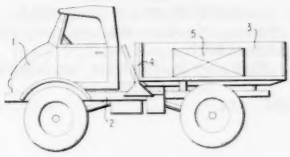
1. The combination with a known automobile body structure including a deck, fenders, at opposite sides of the deck in lateral alignment with each other, a compartment with an open top opening through the deck between the fenders, and a hinged cover for the open top of the compartment;

said body structure having lateral framing portions defining the lateral limits of an opening into the compartment at its top, and each lateral framing portion having at its outboard side a generally upright side wall;

attachable fins separate from the body structure and mounted on the top of the body structure adjacent to said upright side walls, respectively, each fin in a position in which it extends generally endwise of a fender and in which its bottom overlies the top surface of said body structure adjacent said associated upright wall; and

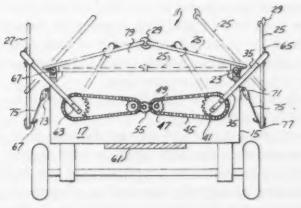
holding means at the base of each fin juxtaposed against the body and secured in fixed relation thereto and to the associated fin and securing the associated fin fixedly in said position on the body.

3,861,736
TRUCK DRIVER PROTECTION SHIELD
Heinrich Rossler, Baden-Baden, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuggart-Unterturkheim, Germany
Filed Dec. 1, 1971, Ser. No. 203,676
Claims priority, application Germany, Dec. 1, 1970, 2058997
Int. Cl. B62d 33/02
U.S. Cl. 296—28 M 8 Claims



1. A truck comprising: a frame means, a driver cab arranged forwardly on said frame means, a loading surface means for carrying a payload arranged to the rear of said driver cab, and a rigid protective panel means interposed between said driver cab and said loading surface means for absorbing the entire impact load impinging thereon caused by at least one of the payload and the loading surface means when sliding in the direction toward the driver cab during a sudden deceleration, said rigid protective panel means being rigidly connected to said frame means independently of said driver cab and said loading surface means to transmit said impact load to said frame means, said protective panel means including a wide base portion at the bottom end thereof for rigidly connecting said rigid protective panel means to said frame means, said protective panel means being bent in its entirety out of its original position to a second position along said wide base portion upon the application of said impact load upon said protective panel means.

3,861,737
POWER CARRIER FOR TARPS AND TOPS OF OPEN-TOP TRUCKS AND TRAILERS
William W. Kirkbride, 14198 Syracuse Ave., Taylor, Mich. 48180
Filed Oct. 4, 1973, Ser. No. 403,506
Int. Cl. B60p 7/02; B61d 39/00
U.S. Cl. 296—100 7 Claims



1. A power carrier for tarps and tops of open-top trucks and trailer vehicles having side and end rails comprising:

a pair of elongated cover halves adapted to register over said rails meeting centrally and longitudinally over said open top;

means anchoring the outer longitudinal edge portions of said cover halves to the side rails;

a pair of U-shaped carriers extending the length of said vehicle outwardly of the side rails with their ends extending over, outwardly of and pivoted upon said end rails;

central portions of said carriers being pivotally connected to said cover halves;

and power means connected to said carriers to simultaneously rotate said carriers from a rest position with said cover halves retracted uncovering said open top, to a closed position with said cover halves in cooperative registry overlying and closing said open top.

3,861,738

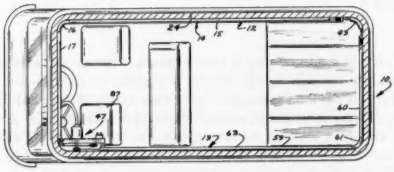
CURTAIN DRAW ASSEMBLY

Keith B. Whitney, c/o Keith Whitney, Inc., 130 S. 8th St., Edina, Minn. 55402

Filed Aug. 16, 1973, Ser. No. 388,820

Int. Cl. B60j *1/00*

U.S. Cl. 296—138 **11 Claims**



1. A draw assembly for curtains adapted for mounting interiorly of a vehicle having a plurality of upright walls situated in adjoining angular relation to each other, said assembly including:

a first traverse unit attachable to the interior of a vehicle, having a first elongated tubular rod defining a first elongated channel coextensive with the first tubular rod, and a second elongated tubular rod defining a second elongated channel coextensive with the length of the second tubular rod;

said first and second tubular rods of said first traverse unit being parallel and integrally connected to each other and having a configuration to be situated in adjacent, parallel relation to at least two of said adjacent walls;

said first and second channels being open at either end of said first traverse unit;

a first endless loop draw cord threaded through said first channel and said second channel and having first and second loop ends extending outward of either end of said first traverse unit;

a drive means having at least one drive pulley rotatably mounted proximate to one end of said first traverse unit; one loop end of said first draw cord engaging said drive means for powered movement of said first draw cord;

a first idler pulley rotatably mounted proximate to the other end of said first traverse unit;

the other loop end of said first draw cord being trained over said first idler pulley;

said second tubular rod on said first traverse unit having a downwardly open slot open to said second channel and coextensive with the length of said tubular rod;

a plurality of curtain suspending elements slideably surrounding the first draw cord located in the second channel of the second tubular rod of the first traverse unit and having a portion depending through said slot adapted to freely suspend a first curtain, one of said curtain suspending elements fixedly engaging said first draw cord;

a second traverse unit attachable to the interior of a vehicle, having a first elongated tubular rod defining a first elongated channel coextensive with the first tubular rod, and a second elongated tubular rod defining a second elongated channel coextensive with the length of the second tubular rod;

said first and second tubular rods of said second traverse unit being parallel and integrally connected to each other and having a configuration to be situated in adjacent, parallel relationship to at least two of said adjacent walls; said first and second channels being open at either end of said first traverse unit;

a second endless loop draw cord threaded through said first channel and said second channel of the second traverse unit and having first and second loop ends extending outward of either end of said second traverse unit;

one loop end of said second draw cord engaging said drive means for simultaneous powered movement of said second draw cord with said first draw cord;

a second idler pulley rotatably mounted proximate to the other end of said second traverse unit;

the other loop end of said second draw cord being trained over said second idler pulley;

said second tubular rod on said second traverse unit having a downwardly open slot open to said second channel and coextensive with the length of said tubular rod; and

a plurality of curtain suspending elements slideably surrounding the second draw cord located in the second channel of the second tubular rod of the second traverse unit and having a portion depending through said slot adapted to freely suspend a second curtain, one of said curtain suspending elements fixedly engaging said second draw cord, whereby operation of the drive means is effective to simultaneously extend and retract a first and second curtain relative to said side walls.

3,861,739

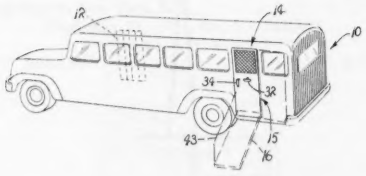
DOOR FOR CLOSING EMERGENCY EXIT OPENING FOR A BUS

Ronald L. Kinney, 1352 N. Salaveras, Fresno, Calif. 93728

Filed Oct. 1, 1973, Ser. No. 402,396

Int. Cl. B60j *5/04*

U.S. Cl. 296—146 **2 Claims**



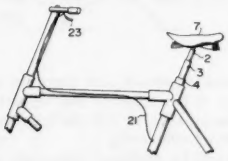
1. In combination with a bus having an elongated body including means defining an elongated passenger compartment, a door opening located near the forward end of said compartment for facilitating passenger ingress and egress, and at least one emergency exit opening located near the other end of said compartment through which passenger egress is facilitated, in the event egress through said door opening is impaired, a panel of a unitary configuration having a length sufficient to extend from said emergency exit opening into supported engagement with the supporting surface for said bus at an angle of inclination suitable for facilitating ambulatory egress from said emergency opening disposed within the emergency exit opening, means supporting said panel for pivotal rotation from said emergency exit opening about a first axis paralleling the longitudinal axis of said body into engagement with a supporting surface for said bus when the bus is oriented in an upright plane, means supporting said panel for

pivotal rotation from said emergency exit opening about a second axis normally related to said first axis for facilitating a pivotal removal of said panel from said emergency exit opening when the vehicle is oriented in a plane angularly related to said upright plane, and means for releasing said panel from within said compartment for pivotal rotation from said emergency exit opening.

3,861,740
SADDLE POSITION ADJUSTING DEVICE FOR A VEHICLE SUCH AS BICYCLE

Yasutomo Tajima; Tsutomu Yasuda, and Genichi Seki, all of Gyoda City, Japan, assignors to Showa Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1973, Ser. No. 389,988
Claims priority, application Japan, June 18, 1973, 48-67747
Int. Cl. B62j *1/00*
U.S. Cl. 297—195 **10 Claims**

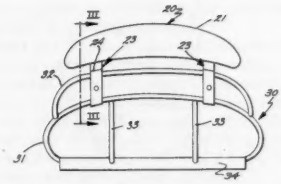


1. A saddle position adjusting device for a vehicle, comprising an oil cylinder carrying a saddle at one end and having oil and gas under high-pressure contained therein, the oil cylinder being mounted in frame means of said vehicle by means whereby said cylinder is slidable in the axial direction but not rotatable with respect to said frame means; means including a piston arranged in said cylinder for communicating the oil between the spaces above and below said piston; means for locking the oil cylinder at a desired position, said locking means including a piston rod of which the lower end is fixed to the frame means; and means for releasing the lock of the oil cylinder, said releasing means being constructed and arranged to permit operation by a rider while on said vehicle.

3,861,741
AUXILIARY BACKREST

Robert M. Kaufman, 7910 20th. Ave., Jenison, Mich. 49428

Filed Sept. 28, 1973, Ser. No. 401,842
Int. Cl. A47c *7/021, 7/14*
U.S. Cl. 297—214 **3 Claims**

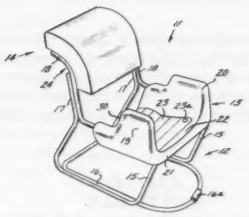


1. A passenger backrest for a motorcycle seat, the seat having a tubular internal frame including a pair of vertically spaced, curved frame members, the rearward portion of the upper surface of said seat being upwardly curved; said backrest comprising: a curved primary plate and a pair of laterally spaced, generally vertically extending support members rigidly secured thereto, each of said support members being adapted to seat against the forward face of said curved frame members; an anchor plate, said anchor plate having a pair of recesses opening through the face thereof directed toward said support members, one of said recesses opening through one end of said plate and the other through the other end thereof; a detachable fastener securing each of said anchor plates intermediate its ends to one of said support members and when tightened pulling said anchor plate and support members together to clamp both of said curved frame members therebetween, one in each of said recesses; said anchor plates each being reinforced between the ends thereof to resist deflection when said fasteners are tightened; said support members being offset intermediate their ends to so position the backrest that it cooperates with and forms a continuity of the body support afforded by said upwardly curved rear portion of said seat.

3,861,742
SAFETY SEAT

William A. Leonard, Plymouth; David M. Preston, Royal Oak, and Thomas W. Smith, Utica, all of Mich., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 3, 1971, Ser. No. 120,524
Int. Cl. A63b *35/00*
U.S. Cl. 297—216 **6 Claims**



1. A safety seat for children comprising:

a light weight structural frame in support of a child, said frame including extensions therefrom having weakened points;

a crash pad interposed in the projected path of the head and shoulders of a passenger in said seat and said pad supported by said extensions of said frame and acting as a lever thereagainst whereby, upon impact of passenger with said pad, said frame deforms permanently to absorb energy against rebound.

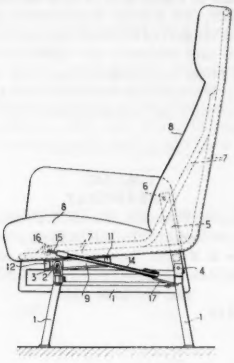
3,861,743
ADJUSTABLE SEAT FOR RAILWAY CARRIAGES AND THE LIKE

Jean Louis Danton, Boulogne, France, assignor to Etablissements Compin, Paris, France

Continuation-in-part of Ser. No. 113,907, Feb. 9, 1971, abandoned. This application Mar. 30, 1973, Ser. No. 347,448
Claims priority, application France, Apr. 27, 1970, 70.15357
Int. Cl. A47c *1/02*
U.S. Cl. 297—329 **7 Claims**

1. An adjustable seat, particularly for railroad cars and the like, comprising an adjustable unitary seat-and-back structure; a fixed base; a dual connection between said fixed base and said seat-and-back, a first of said connections including, toward the front and beneath the seat, a slideway fastened to said seat-and-back structure so as to be movable therewith, said slideway having a slideblock and a slider guide slidably mounting said slideblock, a fixed pin fastened to said base, said slideblock being rotatably connected to said pin; the other of said connections including, downwardly and behind the seat-back, a transversely extending pin on said base and a transversely extending pin on said seat-and-back structure, a tie rod linkage swivably supported between said pin on said

base and said pin on said seat-and-back structure facilitating tilting of said seat-and-back structure relative to said base; an elastic member connected between the front of said seat-and-back structure and the rear of said fixed base and exerting a tractive force therebetween, said seat and said elastic member

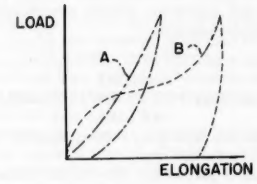


being sized and proportioned so as to ensure a neutral equilibrium to a seat-and-back-and-occupant combination in any adjusted position of said seat; and means limiting travel of said tie-rod linkage between said fixed base and said seat to between two positions of said tie-rod linkage forwardly of a vertical axis.

3,861,744
SAFETY BELT

Hirokazu Yamada, and Akihiro Sato, both of Osaka, Japan, assignors to Ashimori Kogyo Kabushiki Kaisha, Osaka-fu, Japan

Filed Apr. 5, 1973, Ser. No. 348,223
Claims priority, application Japan, Apr. 7, 1972, 47-40881; Apr. 7, 1972, 47-40967; Apr. 7, 1972, 47-40968
Int. Cl. A62b *35/00*
U.S. Cl. 297—386 **2 Claims**

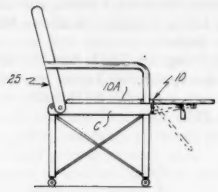


1. In a safety belt for an automotive vehicle and the like wherein a portion of the body of an occupant is encircled by an elongated belt body of substantially non-extensible material having its ends anchored to the vehicle frame to restrain and protect such occupant in the event of a primary impact upon said vehicle, the improvement comprising an expanshion loop or bight formed in such belt body at at least one point between its ends, such expansion loop or bight being of a length to provide upon release thereof limited extension of the belt body up to about 35 percent but short of a length permitting secondary impact of the encircled portion of said occupant against an adjacent part of the vehicle, and yieldable connecting means extending between the loop ends to hold such ends together and constituted essentially of substantially non-elastic undrawn synthetic strands having a capacity to undergo substantial elongation with negligible recovery of elasticity when stressed above a predetermined load below the breaking load thereof and thereby permit release of said loop.

3,861,745
PORTABLE AND COLLAPSIBLE SEAT AND LEG BOARD FOR LEG AMPUTEES

Edward J. Forrest, 66 Elmwood Ter., Wayne, N.J. 07470

Filed June 28, 1973, Ser. No. 374,480
Int. Cl. A47c *7/50*
U.S. Cl. 297—423 **2 Claims**



1. An adjustable portable seat board for leg amputee patients that may be positioned on any support such as a chair to provide a support for not only the leg amputee patient but also the leg stump comprising:

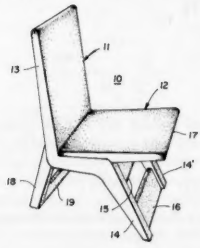
two flat boardlike members connected by a hinge and aligned in horizontal relationship to provide a seat portion pivotally connected to an extended leg stump supporting portion a two armed pivotally connected hinge, a lower arm connected to the underside of the first seat board and an upper arm connected to the underside of the extended leg stump supporting section to support the extended board when in an aligned relationship

a pivotally supported releasing element bearing against the under surface of the upper arm of the pivotally connected hinge, said releasing element forcing the two arms outward when depressed to break their straight line supporting position.

3,861,746
TWO-PIECE CHAIR

Harvey G. Skinner, Ligonier, Pa., assignor to Westmoreland Plastics Company, Division of Vulcan, Inc., Latrobe, Pa.

Filed July 2, 1973, Ser. No. 375,495
Int. Cl. A47c *7/00*
U.S. Cl. 297—440 **5 Claims**



1. A two-piece chair comprising a back-rest element and a seat element adapted for interfitting engagement to form a chair, wherein the improvement resides in providing a back-rest element having two distinct portions fixed together, one of said portions being a planar portion of substantial thickness and providing a back-rest and the other of said portions being of bell crank shape comprising a pair of parallel spaced side members fixed at one end to an end of said planar portion and at least one transverse member connecting said side members,

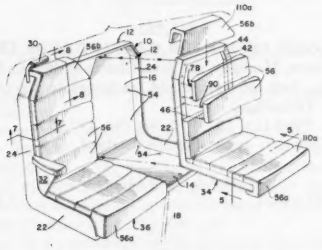
said side members providing front-leg support for the chair, said seat element having two oppositely extending sections disposed divergently at an obtuse angle to each other in bell crank form, one section being of substantial thickness and constituting the seat of the chair, and the other section comprising a pair of parallel spaced side members providing rear leg support for the chair, said rear leg side members being adapted to be inserted between the spaced side members of the back-rest element with the seat section of the seat element resting on the spaced side members of the back-rest element and being fulcrumed against said end of the planar portion of the back rest element at its juncture with the bell crank portion of said back-rest element.

3,861,747

MODULAR SEAT FOR PUBLIC USE

Norman Diamond, 1002 Broadmore Cir., Silver Spring, Md. 20904

Filed Dec. 11, 1972, Ser. No. 313,621
Int. Cl. A47c *7/14*; **B60n** *1/06*
U.S. Cl. 297—452 **7 Claims**



1. A module seat comprising:

a. a seat frame;

b. a supporting frame onto which the seat frame is detachably secured, said supporting frame being composed of angularly related vertical back and horizontal seat sections having means to form a compartment in which a seat frame is seated;

c. means for detachably fastening the seat frame to the supporting frame;

d. a plurality of independent and separate module cushion segments detachably fastened to the seat frame in a contiguous side by side relation to constitute the upholstery for the seat;

e. interengaging means between said seat frame and each individual cushion segment for fastening said cushion segments in place, said interengaging means being hidden by the body of the cushion segment,

the seat frame (a) including back and seat sections having mounting means provided along their side edges, said means having the cushion segments fastened thereto with such cushion segments extending transversely of the seat frame sections in side by side touching relation, and each cushion segment having an individual spring support underlying same and positioned between the mounting means while being held in place by its associated attached cushion segment.

3,861,748

EARTH BORING MACHINE AND METHOD

David T. Cass, Seattle, Wash., assignor to The Robbins Company, Seattle, Wash.

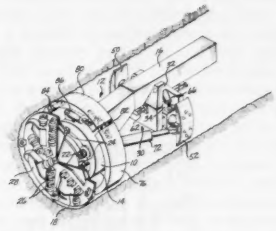
Filed Feb. 8, 1974, Ser. No. 440,695
Int. Cl. E21c *35/08*
U.S. Cl. 299—10 **11 Claims**

1. An axially advanceable tunnel boring machine, comprising:

a support ring anchorable in a tunnel;

a frame including a cutterhead support portion adjacent said support ring;

means pivotally connecting said frame to the support ring at a location close to the tunnel wall, for pivotal movement relative to said support ring about a pivot axis which generally extends parallel to the center line of the tunnel, a forwardly directed rotary cutterhead supported on said cutterhead support, including cutter means thereon for



cutting a bore which is generally equal in diameter with said support ring;

means for tilting said frame, and hence, the cutterhead carried thereby, laterally of the tunnel about said pivot axis, and for adjustably affixing such frame in position relative to said support ring, so that said cutterhead can be tilted from said support ring to in that manner change the direction of the bore; and

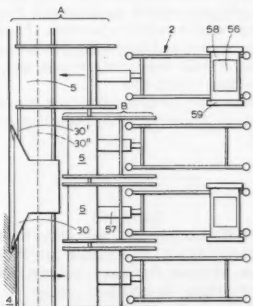
means for advancing said machine during rotation of said cutterhead.

3,861,749

MINERAL MINING INSTALLATIONS

Werner Georg, Altlunen, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed July 8, 1971, Ser. No. 160,636
Claims priority, application Germany, July 8, 1970, 2033807
Int. Cl. E21c *27/35*, *37/16*
U.S. Cl. 299—32 **32 Claims**



1. A mineral mining installation composed of a longwall conveyor arranged alongside a mineral face, cutting means guided for movement along the conveyor, roof support chocks, shifting rams interconnecting the chocks and the conveyor and a plurality of heating devices movable laterally relative to the conveyor between a working position adjacent the face and a retracted position permitting passage of said cutting means.

3,861,750
TUNNEL DRIVING APPARATUS

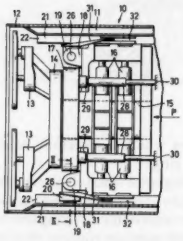
Hans Gunter Follert, Dortmund; Albert Beyer, Werne; Alfons Robatzek, and Eberhard Unger, both of Altlunen, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed July 10, 1973, Ser. No. 377,986

Claims priority, application Germany, July 15, 1972, 2234965; Dec. 20, 1972, 2262388

Int. Cl. E01g *3/04*

U.S. Cl. 299—33 **15 Claims**



1. A tunnel driving apparatus comprising:
a. a cylindrical shield;
b. a cutting head;
c. means for supporting said cutting head;
d. means connecting said supporting means to said shield for variably positioning said cutting head at least partly within said shield,
e. said variable positioning means comprising interengaging slidable guide means and universal joint means, said guide means and joint means being arranged to permit movement of said supporting means along the shield while restraining relative rotation between the shield and the supporting means and to permit positional angular displacement of said supporting means and cutting head relative to said shield; and
f. means connected to said supporting means for moving and angularly displacing said supporting means and cutting head.

3,861,751
LONGWALL MINING APPARATUS FOR ACCOMMODATING FLEXIBLE SUPPLY LINES

Helmut Erwien, Altlunen, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

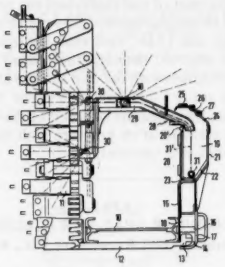
Filed July 31, 1973, Ser. No. 384,231

Claims priority, application Germany, Aug. 19, 1972, 2240870

Int. Cl. E21c *27/35*

U.S. Cl. 299—43 **14 Claims**

1. In an apparatus for accommodating a flexible line in a mine installation and comprising two spaced apart side walls providing a channel for receiving the supply line, the improvement comprising a cover member pivotably attached to one of the side walls and extending over the top of the channel to close off the latter and a gap produced by spacing the upper end of the other of the side walls from the cover member, said gap extending continuously and being unobstructed so as to



serve to receive a guide arm of a mining machine connected to the supply line.

3,861,752
ANTI-SKID DEVICE FOR WHEELED VEHICLES

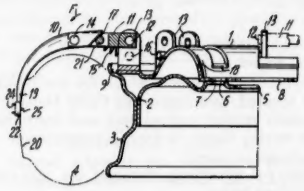
Eugene Thurre, Martigny, and Jean-Claude Roduit, La Batiaz-Martigny, both of Switzerland, assignors to Barry S.A., Geneva, Switzerland

Filed Oct. 16, 1972, Ser. No. 297,827

Claims priority, application Switzerland, Oct. 25, 1971, 15477/71

Int. Cl. B60b *15/22*

U.S. Cl. 301—44 T **4 Claims**



1. In combination with a vehicle wheel having a pneumatic tire with an outer running band, an anti-skid device comprising: a hub-like support secured to the wheel and carrying a plurality of arms pivotally mounted thereon and disposed about a common center lying on the axis of the wheel; a curved elongate gripping member pivotally mounted on each arm towards a free end thereof; each arm and gripping member being movable between a rest position in which the arm extends generally radially inwardly from its point of pivoting on the support and a use position in which the arm extends generally radially outwardly from its point of pivoting on the support, the gripping member extending as a continuation of the arm with a free end thereof passing over and against the running band of the tire; each arm and gripping member assembly including spring means acting between (a) a point of the support spaced apart from the axis of articulation of the arm thereon, and (b) the arm and gripping member assembly for resiliently holding the assembly selectively in the rest and use positions; said spring means comprising a pair of coil springs each connected at one end to said support and at the other end to said arm; and stop means for each arm and member assembly for limiting relative angular movement of the arm and member as the assembly moves into the use position but allowing pivoting of the member and the arm when the outer end of the member is depressed with the running band of the tire when said assembly is in a use position.

3,861,753

METHOD OF AND APPARATUS FOR DISCHARGING PULVERULENT MATERIAL FROM SILOS OR THE LIKE

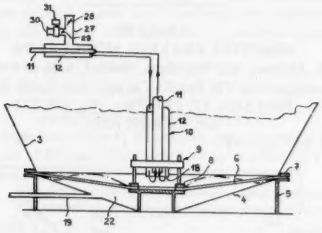
Adolf Lesk; Adolf Zimmerman, and Otmar Link, all of Osterburken, Germany, assignors to Adolf Zimmerman Maschinenbau, Osterburken, Germany

Filed July 17, 1972, Ser. No. 272,654

Claims priority, application Germany, July 17, 1971, 2135832

Int. Cl. B65g *53/40*

U.S. Cl. 302—52 35 Claims



1. A method of discharging pulverent material from a container comprising:

passing the material through a discharge opening of the container,

loosening the material in the area of the discharge opening by introducing pressurized gas pulses of predetermined time duration and at predetermined time intervals into said material, wherein the predetermined time interval between the pulses is at least ten times the predetermined time duration of each pulse, and

removing the material from the discharge opening by means of a suction conveyor installation, and controlling the predetermined time interval between the pulses as a function of the pressure in said suction conveyor installation such that the frequency of the pulses is changed in response to changes in pressure in said suction conveyor installation.

3,861,754

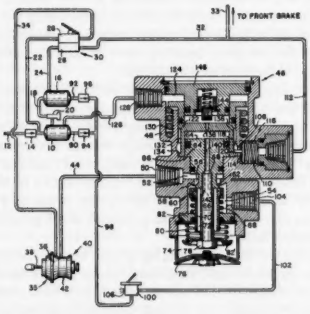
INVERTING LIMITING RELAY VALVE WITH INTERLOCK

Edward J. Kruke, and Roy E. Bartholomew, both of Elyria, Ohio, assignors to The Bendix Corporation, Elyria, Ohio

Filed Apr. 19, 1973, Ser. No. 352,789

Int. Cl. B60t *15/16*

U.S. Cl. 303—13 7 Claims



1. For use in a fluid pressure braking system of the dual circuit type in which each circuit includes fluid pressure actuated brake chambers and one circuit also includes a spring applied fluid pressure released actuator, and a manually operable valve for controlling the application of fluid pressure from a source to said circuits, the invention which comprises a control valve for said actuator comprising a housing having inlet, delivery and exhaust ports adapted to be respectively connected to said source, said actuator and atmosphere, valve means in said housing for controlling said ports, a fluid pressure responsive element having a first motive area subjected at all times to the pressure at the delivery port and operatively connected to said valve means, said element being movable between a first position where said valve means connects said inlet and delivery ports and disconnects the latter from the exhaust port, a second lap position where said valve means disconnects said delivery port from said inlet and exhaust ports, and a third position where said valve means connects said delivery and exhaust ports while disconnecting the delivery port from the inlet port, resilient means acting on said element in opposition to the pressure at said delivery port, a modulation control port in said housing adapted to be connected with the other circuit of the braking system, an interlock control port in said housing adapted to be connected with said source, said fluid pressure responsive element having a second motive area connected with said modulation control port so that fluid pressure from said other circuit acts on said second motive area in opposition to said resilient means to move said element and valve means to said third position and relieve the pressure at said delivery port until the combined forces acting on said fluid pressure responsive element are overbalanced by said resilient means so that the valve means is moved to its second lap position, a valve for normally disconnecting the second motive area from the modulation control port, and a pressure responsive member in said housing constantly subjected to the pressure at said interlock control port and normally occupying a first position, resilient means for moving said member to a second position in response to a reduction in fluid pressure at said interlock control port to a predetermined value, and means actuated by movement of said member to the second position for opening said valve.

3,861,755

ROAD VEHICLE BRAKING SYSTEM INCORPORATING WHEEL SLIDE PROTECTION

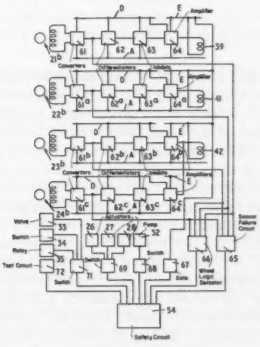
Joseph David Foulkes Taylor, Kidderminster, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed July 10, 1973, Ser. No. 377,908

Claims priority, application Great Britain, July 14, 1972, 32981/72

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 AF 9 Claims



1. A road vehicle braking system for a vehicle having a battery, an ignition switch, brakes acting on the wheels of the

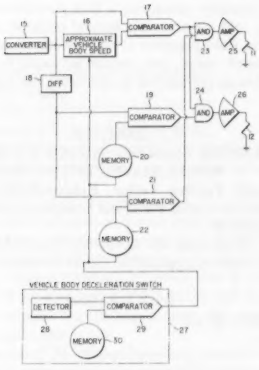
vehicle, and a wheel slide protection system the power for which is supplied by said battery, comprising sensing means for providing a signal representing the rotational deceleration of a vehicle wheel, brake control means responsive to said signal for releasing the brakes from said wheel when the magnitude of the signal exceeds a predetermined value, the electrical power for the system being derived from a battery on the vehicle by way of switching means, first fault sensing means monitoring a first fault which occurs during braking but should not occur when braking is not taking place, inhibiting means operable during braking to inhibit the first fault sensing means, second fault sensing means monitoring a second fault, means coupling one of said fault sensing means directly to the switching means to operate said switching means upon occurrence of the fault being monitored by said one fault sensing means, and means including a delay network coupling the other fault sensing means to the switching means to operate said switching means after a delay upon occurrence of a fault monitored by said other fault sensing means, operation of said switching means saving to disconnect the power supply so that the system reverts to normal braking.

3,861,756

ANTI-SKID SYSTEM FOR VEHICLES

Tetsuro Arikawa, Yokosuka, Japan, assignor to Nippon Air Brake Company Ltd., Kobe, Japan

Filed Aug. 20, 1973, Ser. No. 390,096
Claims priority, application Japan, Aug. 31, 1972, 47-87417
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 BE **4 Claims**



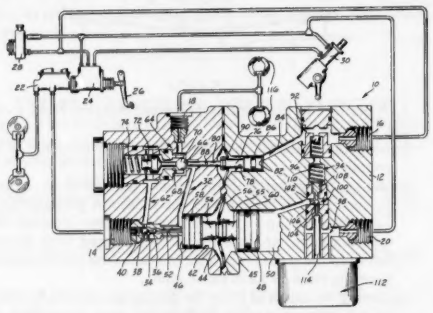
1. An anti-skid system for vehicles comprising means for detecting the rotating speed of a wheel, means for generating an approximate vehicle body speed pattern signal when the rate of reduction of the wheel speed responsive output of said wheel speed detecting means reaches the level of a first reference setting due to the application of the brake, first comparing means for comparing the wheel speed responsive output of said wheel speed detecting means with the approximate vehicle body speed pattern signal thereby generating a first control signal depending on the relation therebetween, means for differentiating the wheel speed responsive output of said wheel speed detecting means thereby producing a signal representative of the wheel acceleration, second comparing means for comparing the output of said differentiating means with a second reference setting representative of a predetermined deceleration thereby generating a second control signal depending on the relation therebetween, third comparing means for comparing the output of said differentiating means with a third reference setting representative of a predetermined acceleration thereby generating a third control signal depending on the relation therebetween, and switch means responsive to vehicle body deceleration for setting said first, second and third settings to one of two levels depending on the road surface condition, said first and third comparing means being connected through an AND gate to the solenoid of a solenoid operated valve in a modulator, said first and second comparing means being connected through another AND gate to the solenoid of another solenoid operated valve in said modulator so as to selectively energize and de-energize the solenoids of said solenoid operated valves thereby relieving, maintaining and increasing the brake fluid pressure.

3,861,757

ADAPTIVE BRAKING MODULATOR

David A. Jackson, and Martin A. Shields, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Sept. 17, 1973, Ser. No. 398,271
Int. Cl. B60f *8/06*
U.S. Cl. 303—21 AF **7 Claims**



1. In a vehicle having a fluid pressure source, brake pressure generating means, and a fluid pressure actuated brake responsive to said brake pressure generating means, an adaptive braking modulator comprising:

a housing having an inlet communicated to said brake pressure generating means, an outlet communicated with said brake, and a primary passage communicating said outlet with said inlet;

adaptive braking valve means controlling fluid communication through said primary passage between said inlet and outlet;

fluid motor means responsive to the fluid pressure from said fluid pressure source for controlling said adaptive braking valve means, said fluid motor means being adapted to close said adaptive braking valve means and thereafter causing a fluid pressure reduction at said outlet;

electrically actuated valve means for controlling fluid communication to said fluid motor means to cause the latter to close the adaptive braking valve means and effect said pressure reduction at said o utlet;

bypass passage means connecting said inlet to said outlet and bypassing said adaptive braking valve means, said bypass passage means including bypass valve means normally closing said bypass passage means and means controlling said bypass valve means, said last-mentioned means being responsive to the fluid pressure level developed by said fluid pressure source to open said bypass valve means when the fluid pressure level generated by said source fails,

said fluid motor means including piston means having a pair of opposed faces and including means for operating said adaptive braking valve means in response to movement of the piston means, one of said faces being exposed to the fluid pressure in said primary passage, the other face cooperating with the wall of said housing to define a first variable volume control chamber therebetween normally

communicated to the fluid pressure generated by said source,

said housing having a second inlet communicated to said fluid pressure source, and a second outlet communicated to a fluid reservoir; and

means communicating said first control chamber with said second inlet, and with said second outlet;

said electrically actuated valve means normally blocking communication between said control chamber and said second outlet and permitting communication between said second inlet and the first control chamber, said electrically actuated valve means upon energization thereof actuating to a position venting said first control chamber to the second outlet and blocking communication between the second inlet and the first control chamber.

3,861,758

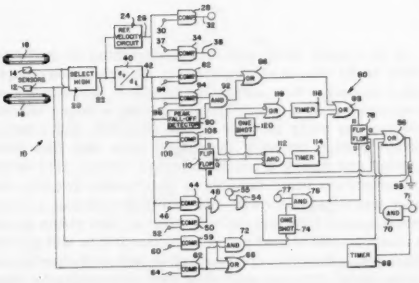
ADAPTIVE BRAKING SYSTEM

John W. Oglesbee; Gale F. Krawczak, and Laurence D. Leadbetter, all of Elyria, Ohio, assignors to The Bendix Corporation, South Bend, Ind.

Filed Sept. 25, 1973, Ser. No. 400,574

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 P **13 Claims**



10. In a vehicle having an axle, a pair of wheels rotatable on said axle, and fluid pressure operated brake means controlling each of said wheels, an adaptive braking system to control actuation of said brake means comprising:

means for generating a first signal proportional to the rotational velocity of one of said wheels and a second signal proportional to the rotational velocity of the other wheel; means for comparing each of said first and second signals to corresponding wheel reference signals having a predetermined value and generating a third signal when the value of either of said first and second signals drops below the value of its corresponding wheel reference signal;

means responsive to one of said first or second signals for generating a fourth signal approximately proportional to vehicle velocity;

means for comparing the value of said fourth signal with a vehicle reference signal having a predetermined value and generating a fifth signal when the value of the fourth signal exceeds the value of said vehicle reference signal; means responsive to simultaneous generation of said third and fifth signals for effecting a brake pressure reduction and terminating said brake pressure reduction upon termination of either of said third and fifth signals.

3,861,759

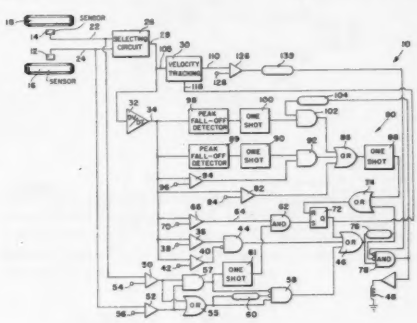
ADAPTIVE BRAKING SYSTEM

Mary T. McNamara; Dennis J. Davis; John W. Oglesbee; Gale F. Krawczak, and Donald J. McKinnon, all of Elyria, Ohio, assignors to The Bendix Corporation, South Bend, Ind.

Filed Sept. 26, 1973, Ser. No. 401,082

Int. Cl. B60t *8/10*

U.S. Cl. 303—21 P **11 Claims**



10. In a vehicle having a wheel and a fluid pressure operated brake controlling said wheel, an adaptive braking system for controlling actuation of said brake comprising:

means for generating a first control signal proportional to the rotational velocity of said wheel;

means for differentiating said first control signal to generate a second control signal proportional to acceleration and deceleration of said wheel;

means for generating a first reference signal corresponding to a first predetermined value of said second signal and a second reference signal corresponding to a second predetermined value of said second signal;

means for comparing said second control signal with said first reference signal and generating a third control signal when the value of said second control signal drops below the value of said first reference signal and terminating said third control signal when the value of said second control signal increases above the value of said second reference signal from a value less than said second reference signal;

means responsive to said first control signal for generating a fourth control signal decaying at a predetermined rate representing an assumed rate of decrease of vehicle velocity;

means for generating a third reference signal corresponding to a first predetermined value of said fourth control signal;

means for comparing said fourth control signal to said third reference signal and generating a fifth control signal when the value of said fourth control signal is less than the value of said third reference signal;

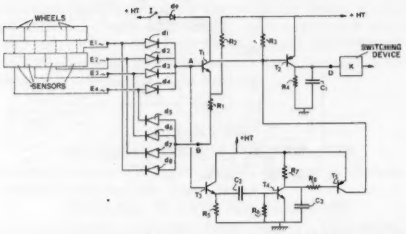
said fifth control signal inhibiting said third control signal; and

means responsive to said third control signal for effecting a reduction of the fluid pressure level actuating said brake; said means for generating said fourth control signal including means for generating a signal decaying at a predetermined rate only when said first control signal decreases at a more rapid rate than said predetermined rate, said means for generating said fourth signal including further means for generating a signal proportioned to said first control signal at all times when the latter increases or decreases at a rate less than said predetermined rate, when the value of said first control signal is greater than the value of the signal decreasing at said predetermined rate.

3,861,760
MONITORING AND PROTECTING CIRCUIT FOR AN ELECTRONIC BRAKING SYSTEM

Gilbert Hamelin, Marly La Ville, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Oct. 23, 1973, Ser. No. 408,345
Claims priority, application France, Nov. 3, 1972, 72.38935
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 AF 3 Claims



1. A monitoring and protecting circuit for an electronic anti-skid braking system of a vehicle having a plurality of wheels, each wheel having sensor means generating a direct current speed signal representative of the rotational speed of said wheel, said electronic anti-skid braking system including switching means controllable to inhibit the operation of the anti-skid braking system, said monitoring and protecting circuit including:

first selector means having a plurality of inputs, each of said inputs being supplied with one of said speed signals, and an output which delivers the speed signal having the highest level;

second selector means having a plurality of inputs, each of said inputs being supplied with one of said speed signals, and an output which delivers the speed signal having the lowest level;

comparing means having inputs connected to the respective outputs of the first and second selector means, and generating an output signal when the difference between said highest and lowest levels exceeds a predetermined quantity;

time delay means receiving said output signal and delivering a signal delayed by a predetermined amount of time;

said delayed signal being transmitted to said switching means for controlling the operation thereof, whereby the operation of the anti-skid braking system is inhibited when said output signal has a duration exceeding said predetermined amount of time,

differentiating means generating a signal representative of the rate of change of the speed signal having the highest level;

threshold sensing means energized in response to said rate of change being in excess of a predetermined value;

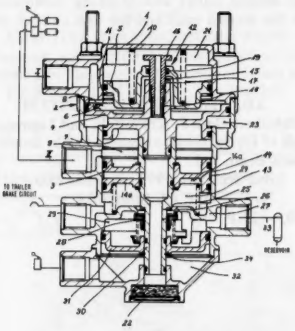
a time constant circuit responsive to the de-energization of said threshold sensing means and producing a signal having a predetermined duration; and

switching means responsive to said signal of predetermined duration for inhibiting the output signal during said duration.

3,861,761
TRAILER BRAKE CONTROL VALVE FOR DUAL-CIRCUIT PNEUMATIC BRAKES OF ROAD VEHICLES

Manfred Siebold, Boblingen, and Siegfried Beck, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 18, 1973, Ser. No. 398,545
Claims priority, application Germany, Sept. 21, 1972, 2246236
Int. Cl. B60t *15/06*
U.S. Cl. 303—52 5 Claims



1. In a trailer brake control valve actuated by dual pneumatic brake circuits of road vehicles, a combination comprising a housing; a first piston displaceable in said housing and comprising a first piston portion having a larger effective surface and being movable in one direction, and a second piston portion normally disengaged from said first piston portion and having a smaller effective surface, said second piston portion being movable in an opposite direction into operative engagement with said first piston portion; a second piston spaced from and defining with said first piston portion a chamber, said second piston being movable in said opposite direction; a first inlet communicating with said chamber and being under pressure prevailing in a first hydraulic brake circuit; a second inlet communicating with said smaller effective surface of said second piston portion and being under the pressure prevailing in a second hydraulic brake circuit; biasing means biasing said second piston portion in said one direction until pressure upon said smaller effective surface exceeds the biasing force of said biasing means so that said second piston portion moves in said opposite direction into operative engagement with said first piston portion, so that the force acting upon said first piston portion and urging the same in said one direction is reduced to the differential of the forces acting upon said effective surfaces; a third inlet subject to the pressure prevailing in a trailer brake circuit; and a third feed-back piston connected with said second piston to resist movement thereof in said opposite direction and having a reaction surface which is exposed to said pressure in said third inlet and so dimensioned that the force acting upon it substantially equals said differential.

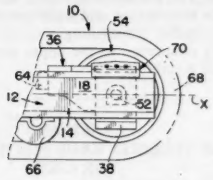
3,861,762
GUARD AND SCRAPER FOR AN IDLER WHEEL

Allan L. Freedy; Thomas P. Muller, both of Aurora, and Gary L. Popdan, Oswego, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 17, 1973, Ser. No. 407,227
Int. Cl. B62d *55/20*
U.S. Cl. 305—12 6 Claims

1. In a vehicle having a frame portion, axle means for rotatably supporting a rotatable member, and bracket means slid-

ably associated with the frame portion and mounting said axle means, the improvement which comprises guard means fixed relative to the bracket means and extending above the slid-



ingly associated areas of the bracket means and frame portion, wherein the guard means has an edge portion extending to adjacent a side of the rotatable member in close proximity thereto and substantially matching the contour of said side.

3,861,763

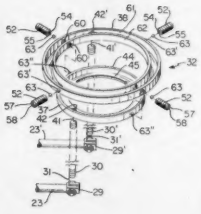
GIMBAL MOUNTING MEANS AND METHOD

Charles H. Perkins, Richmond, Va., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 27, 1973, Ser. No. 355,060

Int. Cl. F16c *11/00*

U.S. Cl. 308—2 R **19 Claims**



1. In a control device having a frame and a gimbal mount carried thereby for operating a control part of said device and wherein said gimbal mount comprises a first member pivotally mounted by pivot means to said frame and a second member pivotally mounted by pivot means to said first member at a right angle to the pivot mounting of said first member, the improvement wherein at least one of said pivot means comprises means carried by the respective member for providing substantially circular line contact for the pivot movement thereof, said one pivot means also comprising means cooperating with said means of said respective member to provide substantially point contact therebetween for thrust load absorbing purposes, said contact being spaced from said circular line contact.

3,861,764

BEARING ASSEMBLY AND BEARING BUSHING THEREFOR

Frederick John Adams, Campton, England, assignor to Cam Gears Limited, Hitchin, Hertfordshire, England

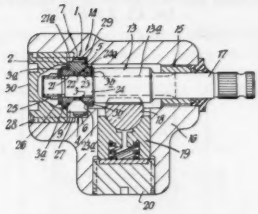
Continuation-in-part of Ser. No. 249,629, May 2, 1972, Pat. No. 3,762,240. This application May 7, 1973, Ser. No. 358,163

Claims priority, application Great Britain, May 19, 1972, 23629/72

Int. Cl. F16c *23/04, 25/04, 27/02*

U.S. Cl. 308—26 **7 Claims**

1. A bearing assembly for a shaft in a housing having a bore which comprises an inner shaft carried bearing for said shaft, an outer housing carried bearing bushing in said bore of the housing surrounding said shaft carried bearing and having an inner periphery supporting the shaft carried bearing and a flexible surrounding skirt for seating in the bore of the housing, said bushing having circumferentially spaced axial slots therethrough extending radially to alternate inner and outer



blind ends connecting the segments separated by the slots whereby the bushing may be expanded in response to outwardly directed forces and contracted in response to inwardly directed forces to be useful throughout a wide range of tolerance variations.

3,861,765

RACK DRILL CUTTING WHEEL BEARING

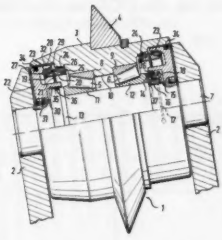
Hans Gunter Follert, Dortmund, and Albert Beyer, Werne an der Lippe, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed June 11, 1973, Ser. No. 368,917

Claims priority, application Germany, June 13, 1972, 2228727

Int. Cl. F16c *19/38, 29/12, 33/78*

U.S. Cl. 308—8.2 **20 Claims**

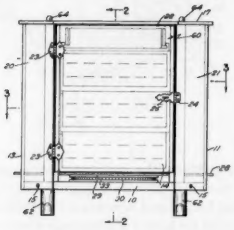


1. In a roller bit assembly for a rock drill which assembly comprises a shaft for mounting between supports on a cutter head of the drill, a body carrying a cutting wheel, roller bearings rotatably mounting said body on said shaft, the roller bearings being disposed in a bearing cavity containing lubricant defined between the body and the shaft and sealing means in the form of metallic rings in sliding contact at the ends of the bearing cavity; the improvement comprising means for adjusting the position of the roller bearings and means for adjusting the contact pressure between the metallic rings independently of the adjustment of the roller bearings, said means for adjusting the position of the roller bearings comprising a collar and a screw-threaded portion on said shaft, a nut having a radial slit and being engaged on the screw-threaded portion of the shaft, a projection extending from said body towards the shaft, inner and outer races for said roller bearings, the inner races being located, respectively, between the collar and the projection and between the projection and the nut with the nut being adapted to adjust the position of the roller bearings, and a screw-threaded member extending across the radial slit of the nut and adapted to selectively clamp the nut with respect to the shaft to thereby secure the roller bearings in a desired position.

3,861,766
DISPLAY CABINET

John M. Corsini, North Providence, and William R. Tipple, Cranston, both of R.I., assignors to Uncas Manufacturing Company, Providence, R.I.

Filed Jan. 23, 1974, Ser. No. 435,848
Int. Cl. A47f 3/10
U.S. Cl. 312—125 4 Claims

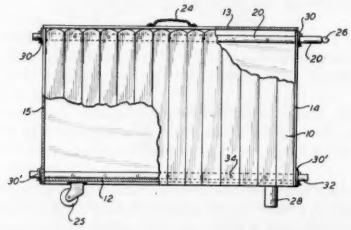


1. A turntable display comprising a cabinet having transparent side walls, a top wall and a bottom wall, a turntable platform rotatably mounted on the bottom wall, said side walls having an opening adjacent the bottom wall and said platform protruding through said opening, display means mounted on said platform comprising upright posts, a panel having a display pad thereon, and means for detachably mounting said panel on said posts.

3,861,767
TRASH RECEPTACLE DEVICE

James Edwin Mead, 55 Southern Blvd., Chatham, N.J. 07928

Filed Feb. 26, 1973, Ser. No. 336,086
Int. Cl. A47b 91/00
U.S. Cl. 312—250 2 Claims



1. A knock-down apparatus for assembly as a receptacle for trash bags, said apparatus comprising a pair of substantially duplicate side wall members, a pair of substantially duplicate end wall members and top and bottom members of flat, thin sheet material, which may be shipped in compact form for assembly by positioning the side wall and end members upright and in parallel spaced relation and registered with the bottom member, to define therewith an upwardly opening receptacle for receiving trash bags;

each of said end wall members having an upper pair and a lower pair of apertures;

a first pair of elongated body rod members passed through said upper pair of apertures in each of said end wall members and connected thereto parallel to and adjacent the side wall members;

a second pair of elongated body connecting rod members passed through said lower pair of apertures in each of said end wall members and connected thereto parallel to and adjacent the side wall members;

fastening means engaging the side wall members and the first and second pairs of elongated rods to hold the same in aligned registration;

said first pair of elongated rods extending beyond one of said end wall members to define handle support means;

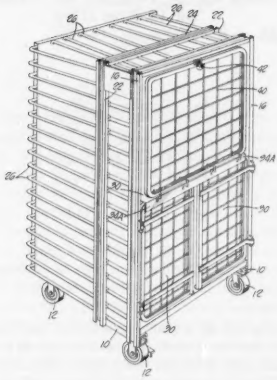
a handle member on said handle support means;

said top member constituting a cover member and being pivotally connected to the upper portion of one of said side wall members.

3,861,768
NESTABLE SECURITY CAGE FOR BULK MAIL, AND THE LIKE

James D. Wilson, Newport Beach, Calif., assignor to Banner Metals Division of Intercole Automation Inc., Compton, Calif.

Continuation of Ser. No. 307,812, Nov. 20, 1972, abandoned.
This application Feb. 19, 1974, Ser. No. 443,373
Int. Cl. A47b 55/02
U.S. Cl. 312—250 5 Claims



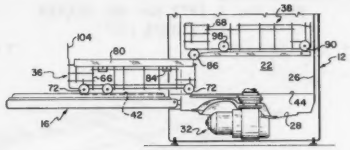
1. A nestable security cage comprising: a lower frame member having a rear end and an open front end, and having side members diverging outwardly from the rear end to the open front end; a pair of upright posts attached to said frame member adjacent the front end thereof; a first transverse member interconnecting the upper ends of said upright posts; a plurality of additional transverse members supported by said posts and enclosing the rear end, the top and the sides of the cage, said transverse members diverging from the rear end to the open front end of the cage; a bottom member supported on said lower frame member; a pair of lower gates hinged to said upright posts and extending across the front end of the cage when in a closed position to enclose a lower portion of the front end of the cage; and an intermediate shelf member supported above said bottom member in spaced relationship therewith and movable to a position in which the forward edge of said intermediate shelf member engages the upper ends of said lower gates to lock the lower gates in their closed position.

3. The nestable security cage defined in claim 1, and which includes an upper gate hinged at its lower edge to the forward edge of said intermediate shelf, and movable to a closed position for enclosing the upper portion of the front end of the cage.

3,861,769
DISHWASHER RACK

Thomas E. Jenkins, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 2, 1973, Ser. No. 320,618
Int. Cl. A47b *88/00*
U.S. Cl. 312—311 **6 Claims**

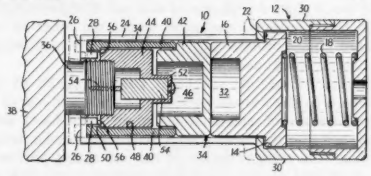


1. A dishwasher comprising a tub providing a wash chamber having an opening therein, a door for closing the opening, a plurality of superposed racks, and means mounting the racks for movement through the opening between washing and loading positions respectively in and at least partially out of the chamber, the mounting means comprising means for supporting an upper of the racks in the washing position independently of a lower of the racks, means supporting the lower rack for movement between the positions independently of movement of the upper rack, and means for at least partially supporting the upper rack on the lower rack in the loading position and during movement toward and away therefrom.

3,861,770
LOCK ASSEMBLY AND TOOL

Martin S. Horak, Morganville, N.J., assignor to Gamco Industries, Inc, Roselle, N.J.

Filed Feb. 8, 1973, Ser. No. 330,697
Int. Cl. H01r *13/54*
U.S. Cl. 339—37 **12 Claims**



1. A locking assembly for locking a threaded coaxial cable outlet comprising:

a. an insert member formed with thread means threadable onto said coaxial cable outlet intended to be locked;

b. cylinder means surrounding said insert member coaxially, said cylinder means being freely rotatable with respect to said insert member about a common axis; and

c. torque receiving means on the end of said insert member having said thread means.

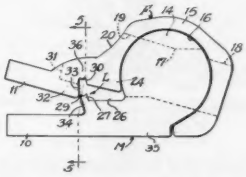
3,861,771
CABLE CONNECTOR WITH FIVE POINT GRIP AND NON-TWIST, NON-PULLOUT FUNCTION AND WITH RATCHET LATCH

Paul A. Cornell, Knockanore, Ireland, assignor to Electro-Clamp Corporation, Beverly Hills, Calif.

Filed Nov. 23, 1973, Ser. No. 418,290
Int. Cl. H01r *9/08*
U.S. Cl. 339—95 R **10 Claims**

1. A cable clamp of the type comprising male and female jaws having respective mounting tails, said male jaw including a transverse cylindrical head having a generally diametrical cable-receiving opening with ends enlarged in a plane normal to its axis, said female jaw including a generally C-shaped coupling sleeve with a cylindrical internal bearing wall receiving said head for relative hinging movements of said jaws between open and closed positions, said coupling sleeve having first and second cable-receiving openings on opposite sides thereof substantially on a diameter of said male head and positioned to register with said head opening in the open position of the clamp so as to receive the end portion of a cable;

said coupling sleeve having, in said first and second sleeve openings, respective first and fourth pressure surfaces on opposite sides of the common axis of said sleeve openings and at diametrically opposite sides of said sleeve with respect to the hinge axis;



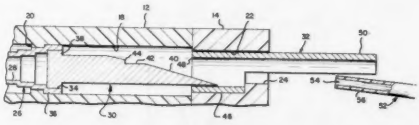
said male head having, at opposite ends of said head opening, respective second and third pressure surfaces diametrically opposed to said first and fourth pressure surfaces respectively across the common axis of said sleeve openings;

said male jaw, between said head and said tail thereof, having a transversely extending fifth pressure element projecting into the adjacent second sleeve opening when the clamp is closed, for bending the end portion of said cable toward and around said fourth pressure surface, to which said fifth pressure element is generally opposed but outside the outer extremity thereof.

3,861,772
INSULATION PIERCING CONTACT AND CONNECTOR

Howard Richard Shaffer, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 13, 1973, Ser. No. 396,929
Int. Cl. H01r *9/06*
U.S. Cl. 339—99 R **14 Claims**



1. An insulation stripping contact comprising:

a pin member having an inclined surface extending longitudinally along said pin and at least one transverse step formed in said surface;

a cylindrical member including a barrel portion having a sharp inner annular edge at one end;

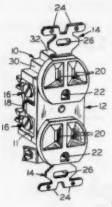
electrical terminal means connected to one of said members and adapted to mate with compatable electrical terminal means;

said cylindrical member and said pin member being axially slidably movable with respect to each other whereby insulated wire passing through said barrel and laying against inclined surface will be engaged and the insulation stripped from the conductor by said step and said annular edge to effect good electrical and mechanical contact.

3,861,773
WIRE TERMINAL FOR ALUMINUM WIRE

Harry Triantafellow, Providence, and Ralph L. Graves, East Greenwich, both of R.I., assignors to General Electric Company, New York, N.Y.

Filed June 29, 1973, Ser. No. 375,185
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 R 10 Claims

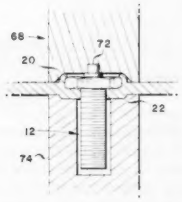


1. A wiring terminal for aluminum wire which comprises:
a. a metal base member having an electrical conductivity at least equivalent to that of surface tinner 70–30 brass,
b. a threaded opening in said plate,
c. a headed screw threaded into said threaded opening to generate a compressive force on a wire placed between the head of said screw and the confronting surface of said plate on application of a torque to said screw,
d. the shank of said screw having a coefficient of thermal expansion close to that of aluminum and at least as high as that of 70–30 brass,
e. the undersurface of the screw head of said wire terminal being lubricated to substantially increase the compressive force generated by application of a given torque,
f. and means to restrain pivoting of a wire about the axis of said screw after it is compressed in place.

3,861,774
COINED GROUND STUD

William M. Willis, Northridge, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed June 14, 1973, Ser. No. 369,952
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R 5 Claims

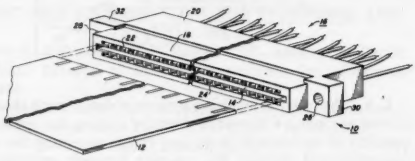


1. An electrical ground stud assembly comprising a metallic base member, a cavity of a predetermined shape coined into said base member comprising an upstanding flange unitary with said base member, surrounding the opening of the cavity and extending to one side of said base member and a washer-like protrusion defining the bottom of the cavity and extending from and unitary with the opposite side of said base member, said assembly further comprising a stud having a non-round cross-sectional shaped head and a threaded shank, the head of said stud being located within said cavity and snugly filling said cavity in planes perpendicular to the axis of said stud, said flange comprising a portion overlying the outside surface of said stud head, whereby said stud is non-rotatably secured within said cavity, and an opening formed within said washer-like protrusion receiving and passing the shank portion of said stud.

3,861,775
MULTIPLE CIRCUIT BOARD CONNECTOR

James L. Makins, Palmyra, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 3, 1972, Ser. No. 303,458
Int. Cl. H05k *1/07*
U.S. Cl. 339—17 L 7 Claims



1. An electrical connector for interconnecting a multiple circuit board with a plurality of lead wires, including:
a first elongated dielectric block having at least a pair of opposed space rows of open ended compartments defining a groove therebetween extending substantially along the longitudinal axis thereof from one end wall and terminating at the other end wall spaced therefrom; compartments on one side of said groove being paired with compartments on the other side of said groove such that pairs of compartments lie along lines normal to said longitudinal axis;
a second elongated dielectric block having at least a pair of rows of apertures with said apertures being staggered in one row from the other, said second elongated dielectric block being secured to said first elongated dielectric block with the apertures in said second elongated dielectric block aligned with one of said pair compartments in said first elongated dielectric block, the other of said paired compartments being closed off by said second dielectric block; and
a plurality of resilient electrical contacts, each of said contacts having a shank portion extending into one of the apertures in said second elongated dielectric block and a leaf spring portion having an arcuate region and a straight region, said straight region of the leaf spring portion of each of said resilient electrical contacts extending into said one of said paired compartments of said first elongated dielectric connector with the center to center distance between adjacent shank portions on the same side of said groove being about 0.300 inches, the arcuate region of the leaf spring portion being arranged to extend into the groove of said first elongated dielectric block to electrically connect the multiple circuit board in the groove of said first elongated dielectric block with lead wires secured to the shank portion of said resilient contact.

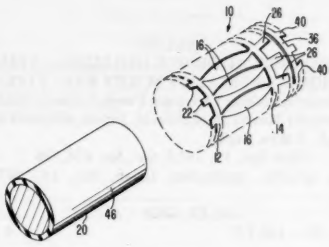
3,861,776
ELECTRICAL CONNECTOR WITH TERMINAL LOCK MEANS

Robert S. Deal, Mountain View, Calif., assignor to Multilam Corporation, Los Altos, Calif.

Filed Jan. 15, 1973, Ser. No. 323,541
Int. Cl. H01r *13/20*
U.S. Cl. 339—74 R 6 Claims

1. An electrical connector comprising: an electrically conducting, unitary body having a pair of spaced, annular bands having a common central axis, a plurality of spaced louvers integral with the bands and extending therebetween, the louvers being disposed about said central axis, being at respective inclined positions relative to diametral planes passing therethrough, and projecting laterally from the connections thereof

with said first bands, whereby one side of each louver will engage the inner surface of a first, tubular terminal in which said body is positioned and the opposite side of each louver will be disposed to engage the outer surface of a second, jack-like terminal inserted into the body; a third annular band spaced from one of said pair of bands and being concentric to said axis; means connecting the third band to said one band;



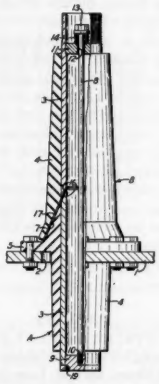
and a plurality of spaced teeth integral with the third band and being inclined relative thereto, the teeth extending inwardly of the third band and in a direction away from said one band, said teeth adapted to engage the outer surface of said second terminal after the latter has been inserted in one direction into said body to thereby lock said second terminal against movement in the opposite direction out of said body.

3,861,777

SEPARABLE ELECTRICAL CONNECTOR

Robert M. Clark, Ligonier, Pa., assignor to Permali Incorporated, Mount Pleasant, Pa.

Filed Sept. 20, 1973, Ser. No. 398,991
Int. Cl. H01r *13/54*
U.S. Cl. 339—92 R **7 Claims**



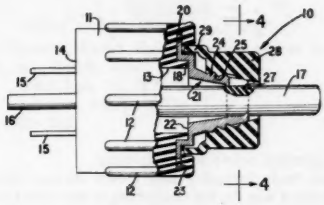
1. A separable electrical connector for electrical apparatus having a housing, the connector having inner and outer ends and comprising a tubular electrical conductor, an insulating bushing encircling the conductor and joined thereto, the conductor and bushing being separated transversely into adjoining inner and outer sections, the inner section of the bushing being adapted to extend through a hole in a said housing and being encircled by a flange for attachment to the housing around such a hole, one of the adjoining ends of said sections being tapered to form a conical end portion in which the end surfaces of the bushing and conductor are tapered, the other of said adjoining ends being provided with a tapered socket receiving said conical end portion, the end surfaces of the bushing and conductor forming the side wall of the socket being tapered in the same direction as said conical end portion, corrosion-resistant metal plated on the opposed tapered surfaces of the tube sections in said socket, and means including a spring pressing said sections tightly together.

3,861,778

ELECTRICAL CONNECTOR WITH STRAIN RELIEF

Peter Capra, Newark, N.J., assignor to Sola Basic Industries Inc., Milwaukee, Wis.

Filed May 22, 1974, Ser. No. 472,183
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 R **7 Claims**



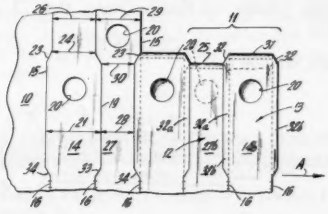
1. An electrical connector comprising a housing of plastic material having a bore therethrough for receiving within one end thereof a socket or plug, a plastic tubular insert having an external flange at one end thereof embedded in said housing, said flange having a plurality of openings therein into which the housing plastic enters to lock said housing and insert together, said insert having external threads thereon and adapted to receive an electrical cable therethrough, a nut threaded upon said insert and having an end projection engageable with said housing upon being tightened, the tightening of the nut upon said insert causing said insert to grip a cable therein.

3,861,779

POLARIZED ELECTRIC CONTACT BLADE

Louis F. J. Pfeifer, Springfield, N.J., assignor to Heyman Manufacturing Company, Kenilworth, N.J.

Continuation-in-part of Ser. No. 177,395, Sept. 2, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,573
Int. Cl. H01r *13/64*
U.S. Cl. 339—184 M **13 Claims**

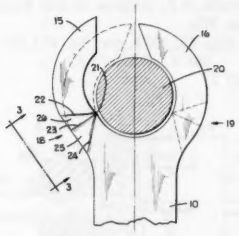


1. A set of folded metal polarized blades for an electric plug comprising a narrow blade and a wide blade, each of said blades being defined by first and second longitudinal folds, folding from a bending line, the first fold of each of said blades being of the same given width, the second fold of the narrow blade having a width less than said given width, and the second fold of said wide blade having a width greater than said given width, each blade end having crimping means to join the blade to a line cord, joint means for maintaining said blades in a continuous strip with said first folds juxtaposed with each other on one side of said bending lines and with said second folds juxtaposed with each other on the opposite side of said bending lines.

3,861,780
SELF-CLOSING TERMINAL CONNECTOR

James C. Hobbs, II, 4384 Ingraham Hwy., Miami, Fla. 33133

Filed Apr. 18, 1973, Ser. No. 352,236
Int. Cl. H01r 7/18
U.S. Cl. 339—276 T 8 Claims



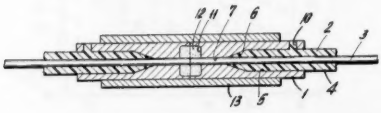
1. A terminal connector comprising:

a main body including first means thereon operable to receive a wire for the connecting of said wire to said main body, said body also including a pair of arms with spaced apart distal ends between which a rod-like member may pass, said arms being spaced apart to straddle said rod-like member with at least one of said arms including an outer edge and an inner edge and upraised portion means in the form of a segment of a frusto conical surface extending completely across one of said arms from said inner edge to said outer edge and being operable when substantially flattened and depressed to move the distal end of said one arm toward the distal end of the other arm preventing passage of said rod-like member between said distal ends, said arms having base portions with said rod-like member having a center locatable between said base portions and said distal ends, said frusto conical surface being located on one of said base portions.

3,861,781
SEPARABLE OPTICAL FIBER CONNECTOR AND THE METHOD OF MANUFACTURING THE SAME

Hiroyuki Hasegawa; Keizo Baba, and Takemi Kamada, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo-to, Japan

Filed Oct. 18, 1973, Ser. No. 407,674
Claims priority, application Japan, Oct. 23, 1972, 47-105955
Int. Cl. G02b 5/14
U.S. Cl. 350—96 C 5 Claims

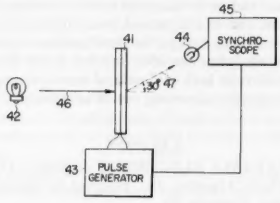


1. A separable optical fiber connector structure adapted for optical coupling between a pair of thermoplastic-coated optical fibers or between a single such fiber and a light source, said fiber connector comprising a terminal member of symmetrical cross-section with respect to its central axis and having a through hole extending axially therethrough, said through hole having a first portion having a relatively large inner diameter that is substantially equal to the outer diameter of the thermoplastic coating of said fiber extending from one end of said terminal member, a second portion having a relatively small diameter substantially equal to the diameter of said fiber extending from the other end of said terminal member, and a tapering portion extending between said first and second portions, and an axial recess formed at said other end of said terminal member, said optical fiber being inserted from said one end of said terminal member through said through hole to protrude from said other end with its thermoplastic coating removed at said second portion and filling said first portion, and a binding and fixing agent filling said recess for providing a flat end surface at said other end of said terminal member and for fixing said fiber thereto.

3,861,782
ELECTRO-OPTICAL DEVICE UTILIZING A NEMATIC LIQUID CRYSTAL OF SCHIFF BASE TYPE

Kenji Murao; Kazuhisa Toriyama; Fumio Nakano; Mikio Sato, and Tadashi Muroi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 13, 1973, Ser. No. 426,706
Claims priority, application Japan, Dec. 18, 1972, 47-126115
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 4 Claims



1. In an electro-optical device comprising a layer of a nematic liquid crystal of Schiff base type capable of exhibiting dynamic scattering effect; means for supporting said liquid crystal layer; a plurality of first electrode means for applying a pulse electric field to said liquid crystal layer, said liquid crystal layer being divided thereby into a plurality of segments; second electrode means for applying a pulse electric field to said liquid crystal layer, the second electrode means being positioned opposite to the first electrode means, the liquid crystal layer being sandwiched between the first electrode means and the second electrode means; means for applying a pulse electric field through the first and second electrode means to the segments of the liquid layer by multiplexing, an improvement comprising the liquid crystal containing 0.01 to 1.0 percent by weight of an alkyl iodide compound having an alkyl group of 1 to 4 carbon atoms, based on the nematic liquid crystal.

3,861,783
LIQUID CRYSTAL DISPLAY FEATURING SELF-ADJUSTING MOSAIC PANEL

Hans G. Dill, Costa Mesa; Alex M. Leupp, and Darrell M. Erb, both of Newport Beach, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed June 28, 1973, Ser. No. 374,443
Int. Cl. G02f 1/28, 1/36
U.S. Cl. 350—160 LC 8 Claims

1. A liquid crystal display panel comprising in combination:

a. a transparent front plate having a transparent electrode thereon;

b. a plurality of semiconductor wafers arranged side-by-side to form a coplanar array, each having

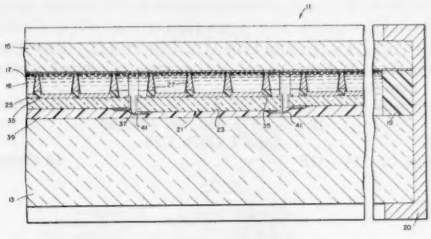
1. a plurality of electrodes distributed over one of its faces,

2. a spacer structure of uniform height extending from said one of its faces into abutment against said front plate, and

3. contacts on the opposite one of its faces and means for operatively connecting said plurality of electrodes to said contacts;

c. a backing plate extending parallel to and maintained a fixed distance from said front plate;

d. a flexible insulating sheet compressed between the said opposite faces of said wafers and said backing plate; and



e. a plurality of flexible conducting pads on said insulating sheet located to provide a bridging contact between contacts of adjacent ones of said wafers, whereby random variations in wafer thickness are compensated by differential compression of said insulating sheet;

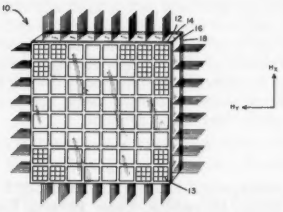
f. a nematic liquid crystal material confined between said front and back plates.

3,861,784

PROGRAMMABLE DIFFRACTION GRATING

Ernest J. Torok, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed June 29, 1973, Ser. No. 375,255
Int. Cl. G02b *5/18*
U.S. Cl. 350—162 R **11 Claims**



1. A programmable diffraction grating, comprising:

a planar matrix array of X directional magnetic field generating elements;

a planar matrix array of Y directional magnetic field generating Y elements;

pairs of interacting ones of each of said X and Y elements arranged in an interacting X and Y directioned magnetic field configuration;

X current source selection means selectively coupled to each of said X elements for selectively coupling an X selection current of selectable polarity and amplitude to a selected one of said X elements;

Y current source selection means separately coupled to each of said Y elements for selectively coupling a Y selection current of selectable polarity and amplitude to a selected one of said Y elements;

a plurality of coplanar stripe-domain film elements, a separate one inductively coupled to only a separate pair of said interacting X and Y elements for forming XY optical cells;

current control means concurrently controlling said X and Y current source selection means for concurrently coupling selected X and Y selection currents of selected polarities and amplitudes to a selected one of said pairs of said interacting X and Y elements for generating in the plane of the one inductively coupled stripe-domain film element a resultant DC magnetic field H_R of a predetermined direction and magnitude;

AC field means inductively coupled to said XY optical cells and coacting with the associated resultant DC magnetic fields H_R for generating a selected configuration of substantially continuously different dimensioned stripe-domain wall separations in said plurality of coplanar stripe-domain film elements.

3,861,785

WIDE ANGLE MIRROR ASSEMBLY

Roberto Barbour, Roslyn Harbor, N.Y., assignor to Cryton Optics, Inc., Rosyln, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,070
Int. Cl. G02b *17/00*
U.S. Cl. 350—202 **4 Claims**

1. A wide-angle rear view mirror assembly comprising a flat, thin Fresnel lens having a negative focal length, said lens being constituted by a series of spaced prismatic grooves each at a different angle and at a different depth formed in a clear plastic sheet of high clarity, a plane mirror disposed behind said lens and a transparent plate disposed in front of said lens, said mirror and said plate being in direct contact with said flat lens to form a sandwich assembly, and a frame surrounding the margin of said sandwich assembly and protectively sealing said lens therein to prevent the entry of contaminants that would otherwise disturb the clarity of said lens, said lens having optical characteristics which in combination with said mirror are the equivalent of a convex mirror whose focal length is negative.

3,861,786

SYSTEM FOR MOUNTING AN OPTICAL LENS IN A HOLDER FOR LIMITED MOVEMENT ALONG A FIXED AXIS

Roger B. Badgett, Elk Grove, Ill., assignor to Teletype Corporation, Skokie, Ill.

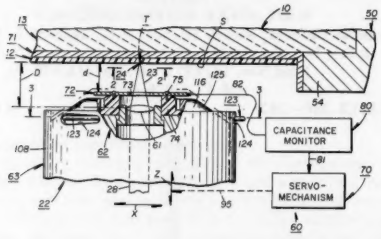
Filed May 17, 1973, Ser. No. 361,375
Int. Cl. G02b *7/02*
U.S. Cl. 350—255 **8 Claims**

1. In combination with an apparatus for mounting an optical lens for limited movement along a fixed lens axis A, of the type having a cylindrical lens housing defining the axis A; a fixed outer support member having a cylindrical bore, within which the lens housing is concentrically mounted; a pair of spaced, parallel, flexible washers for mounting the lens housing concentrically in the support member, the washers having inner portions fixed to spaced portions of the lens housing so that the inner portions of the washers are constrained to follow movement of the lens housing along the A axis; means for securing outer edges of the washers within the support mem-

ber; and means engaging portions of the lens housing for moving the housing limited distances along the A axis, the flexible mounting washers preventing lateral travel of the lens housing during such movement; an improved mounting and positioning mechanism characterized in that:

A. the outer support member is mounted vertically and is formed with an inwardly projecting annular ledge near its base for receiving and supporting outer portions of the periphery of a first one of the washers; and

B. the means for securing comprises a lower mounting ring fitting slidably and closely within the bore of the outer support member above the ledge, the lower mounting ring having a bottom surface shaped to engage outer



peripheral portions of the first washer and to urge those portions against the ledge of the support member, the lower ring also having an upper surface shaped to receive and support outer portions of the periphery of the second washer thereon, an upper mounting ring fitting slidably and closely within the bore of the outer support member above the first ring and having a bottom surface shaped to engage outer peripheral portions of the second washer and to urge those portions against the upper supporting surface of the first ring, and means for pressing the upper ring downward to force both rings toward the ledge so that both washers are detachably clamped within the outer support member by the rings.

3,861,787

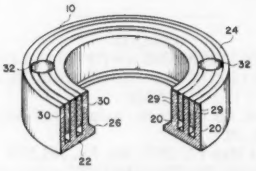
LASER MIRROR

Edward V. Locke, Rockport, and Richard A. Hella, Andover, both of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Aug. 29, 1973, Ser. No. 392,622

Int. Cl. G02b *5/08*

U.S. Cl. 350—288 **5 Claims**



1. Laser mirror apparatus comprising:

means defining a high conductivity, high strength annular mirror with a forward reflecting surface, a back surface and at least one sidewall, said means have a plurality of annular grooves having sidewalls, said grooves being concentric with each other, closed on themselves and extending from said back surface toward said reflecting forward surface, each said groove having a base portion adjacent said reflecting forward surface; and

annular ring means sealably disposed within and filling a portion of each groove, said ring means extending from said back surface to a point adjacent the base portion of said grooves to define with each groove an annular coolant flow passage, said ring means being welded to said groove sidewalls over a depth of one-half to full depth of said ring means whereby said means defining said mirror and said ring means are substantially integral one with another.

3,861,788

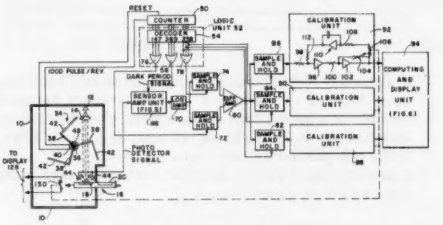
OPTICAL ANALYZER FOR AGRICULTURAL PRODUCTS

Donald R. Webster, Laurel, Md., assignor to Neotec Corporation, Rockville, Md.

Division of Ser. No. 283,270, Aug. 24, 1972,. This application Dec. 3, 1973, Ser. No. 420,863

Int. Cl. G02b *5/28*

U.S. Cl. 350—315 **10 Claims**



1. Optical apparatus for continuously shifting the bandwidth of light illuminating an object, comprising a source of wide band light for illuminating an object, a multiple filter assembly having a rotatable axle and a plurality of narrow bandwidth optical interference filters fixed to said axle and radiating therefrom at the same axial location in respective planes forming therewith a paddlewheel configuration, said filter assembly being positioned relative to the light path defined between said light source and the object such that said filters are swept through said light path individually during rotation of said axle, said wide band light impinging on each successive one of said filters as the orientation thereof relative to said light path is changing, whereby light passing through each one of said filters is restricted to continuously shifting bandwidths as a function of the instantaneous angle between said light path and a given filter during rotation.

3,861,789

WIDE-ANGLE OPHTHALMOSCOPE

Helmut A. Heine, Herrsching, Upper Bavaria, Germany, assignor to Optotechnik Heine KG, Herrsching 10BB, Germany and Propper Manufacturing Company, Inc., Long Island City, N.Y.

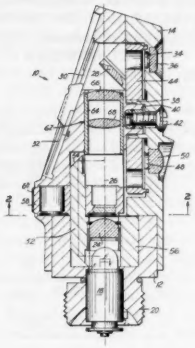
Filed May 23, 1973, Ser. No. 363,240The portion of the term of this patent subsequent to Aug. 17, 1988, has been disclaimed.

Int. Cl. A61b *3/12*

U.S. Cl. 351—12 **7 Claims**

1. In a hand-held ophthalmoscope, a housing having a hollow interior, an optical illuminating system carried by said housing in the interior thereof and including a light source and a light-deflecting means for directing light along an optical axis of said illuminating system from said light source toward an eye which is to be viewed, said optical illuminating system including a wide angle objective situated along said optical axis between said light source and said light-deflecting means, an observation system also carried by said housing and including a rotary lens wheel carrying a plurality of lenses for situating a selected lens along an observation light path of the observation system at that part thereof through which the operator observes the eye, said rotary lens wheel being supported for rotary movement by said housing and being made of a transparent material provided with an inner surface di-

rected toward and communicating with the interior of the housing at an interior portion thereof which is axially displaced along said optical axis from said light source between the latter and said light-deflecting means and said rotary lens wheel having an outer surface directed outwardly toward the operator and carrying indicia for respectively indicating which of the lenses of the lens wheel is in an operative position at the observation path, and light-conducting means situated entirely in the interior of said housing and being spaced in its entirety radially beyond said optical axis and extending parallel to said



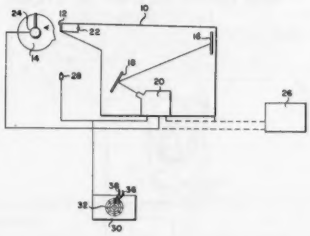
optical axis from a location situated beside said light source to a location communicating with said interior portion of said housing with which said inner surface of said rotary lens wheel communicates for receiving light radiating radially from said light source and for conducting the received light along a path spaced radially beyond and extending parallel to said optical axis into said interior portion of said housing to illuminate said inner surface of said transparent lens wheel for directing through the latter light which illuminates the indicia even in the dark, so that the operator knows which of the lenses has been located at the observation path.

3,861,790

DYNAMIC VISUAL ACUITY TESTING SYSTEM

Raymond M. Tamura, 218 Lagoon Dr., Honolulu, Hawaii 96819

Filed Feb. 14, 1973, Ser. No. 332,261
Int. Cl. A61b *3/02*
U.S. Cl. 351—17 **11 Claims**



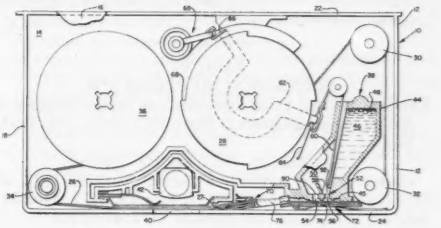
1. Apparatus for visual testing of a subject comprising: visually presented stimuli having a sequentially changing visual angle, means for allowing a viewing of the stimuli by the subject, first recording means for automatically recording the changing of the stimuli, and second recording means manually controlled by the subject for recording the reaction of the subject to the changing of the stimuli, and a time passage indicator common to a record provided by the first recording means and a record provided by the second recording means, said time passage indicator comprising visible indicia divided into equal time intervals, the records provided by said first and second recording means being visible, generally coextensive and positioned generally adjacent, parallel, and along said time passage indicator for a visual comparison therewith.

3,861,791

FILM HANDLING CASSETTE EMPLOYING FILM CLEANING AND DEVELOPING ARRANGEMENTS

Edward F. Burke, Jr., Reading, Mass., and Frank M. Czumak, Derry, N.H., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1973, Ser. No. 428,381
Int. Cl. G03c *11/00*
U.S. Cl. 352—130 **22 Claims**



1. An applicator for treating with processing fluid an exposed strip of photographic film material having a light sensitive emulsion on one surface so as to develop viewable images on such film strip, said applicator comprising a housing including a chamber configured to receive such processing fluid, said housing including a processor nozzle having a surface formation configured to confront the emulsion layer on the film strip and having a pair of openings through said surface formation for expressing processing fluid to at least a portion of such emulsion intermediate the margins of such film strip when relative motion is effected between such film strip and said housing so as to advance such film strip serially across said openings, a first of said openings in relation to the relative motion of such film strip during processing being operative to wet such emulsion layer with such fluid so as to remove particles therefrom, and a second of said openings being configured for depositing a layer of such processing fluid on at least such intermediate portion.

3,861,792

AUTOMATICALLY ACTIVATED AUDIO-VISUAL DEVICE

William R. Donati, 164 East 33rd St. Apt. 19, New York, N.Y. 10016

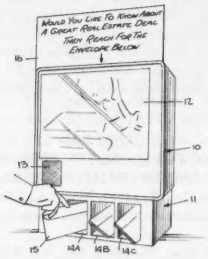
Filed Sept. 10, 1973, Ser. No. 395,505
Int. Cl. G03b *31/00*
U.S. Cl. 353—15 **6 Claims**

1. An unattended audio-visual presentation system which is rendered automatically operative only when a prospect evinces interest in the subject matter of the presentation, said system comprising:

A. a power-operated audio-visual device capable off cyclically presenting a program lasting a predetermined period, said program being repeated as long as the device is continuously powered; and

B. an adapter coupled to said device to apply power thereto for a timed interval, said adapter including a dispenser for documents related to the program and freely available to prospects, a sensor switch to detect the presence of an interested prospect who takes a document from the dis-

penser and to effect a switching action, a timer responsive to said switching action and operating to supply power to



said device for a period equal to said predetermined period, and means to de-activate said sensor switch during operation of said timer.

3,861,793

SOUND-ON SLIDE PROJECTOR

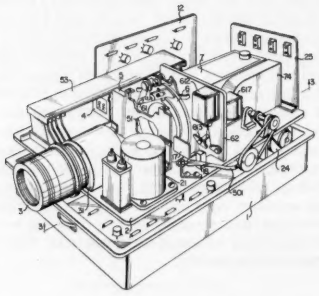
Kazutada Takeda; Yukio Kawabata, and Mitsuo Nakatani, all of Gifu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed June 29, 1973, Ser. No. 375,156

Claims priority, application Japan, June 29, 1972, 47-65712; June 29, 1972, 47-65713; June 29, 1972, 47-65714; June 29, 1972, 47-65715; June 29, 1972, 47-65716

Int. Cl. G03b *31/06*

U.S. Cl. 353—19 **18 Claims**



1. A sound-on slide projector comprising:

a. a scanning means for a magnetic recording or reproducing apparatus, said scanning means including

a support member,

a rotary disc rotably mounted on said support member,

motor means operatively associated with said rotary disc for imparting rotational movement thereto,

a radially movable magnetic head mounted on said rotary disc, motive means operatively connected to said motor means for shifting said magnetic head radially along said rotary disc concurrent with the rotation of said disc whereby the locus of movement of said magnetic head defines a spiral recording or reproducing track and resetting means for resetting said magnetic head back to a predetermined radial starting position;

b. a detecting means for sensing at least a predetermined radial end position of said magnetic head and for energizing first operative means upon sensing said end position to disable said motive means and to activate said resetting means;

c. means for detaching said magnetic head and the slide frame during the resetting of said magnetic head;

d. slide frame changer means for positioning a slide in a projector guide frame means; and,

e. a guard switch means actuated by a starting switch for preventing operation of said automatic slide frame changer when said scanning means is operating.

3,861,794

MAGAZINE TYPE SLIDE PROJECTOR WITH AUTOMATIC FOCUSING MEANS

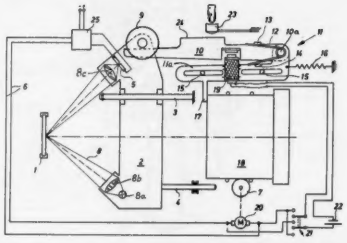
Reinhard Sobotta, Mascherode, Germany, assignor to Roller-Werke Franke & Heidecke, Braunschweig, Germany

Filed Oct. 19, 1973, Ser. No. 408,054

Claims priority, application Germany, Oct. 21, 1972, 2251757

Int. Cl. G03b *3/10*

U.S. Cl. 353—101 **12 Claims**



1. A slide projector comprising means for holding a picture slide in projection position, a projection lens movable in the direction of its optical axis for projecting an image of said slide onto a viewing screen, a carriage movable in the direction of said optical axis, automatic focusing light beam projecting means and receiving means both mounted on said carriage to move therewith, motor means controlled at least in part by said automatic focusing light beam projecting and receiving means for moving said projection lens axially, and disconnectable coupling means for coupling said carriage to said projection lens so that when said coupling means is effective, axial movement of said projection lens will cause corresponding axial movement of said carriage and said automatic focusing light beam means, and when said coupling means is ineffective, said projection lens may be moved axially by said motor means without tending to cause movement of said carriage or said automatic focusing light beam means.

3,861,795

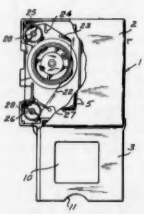
CASSETTE FOR A SOUND SLIDE PROJECTOR

Alfred W. Wakeman, Durham, Conn., assignor to Kalart Victor Corporation, Plainville, Conn.

Filed July 25, 1972, Ser. No. 274,909

Int. Cl. G03b *23/02*

U.S. Cl. 353—120 **11 Claims**



1. A cassette for a sound slide projector, said cassette comprising:

a casing having a top wall, a bottom wall and two side walls and including an upper first compartment for accommodating therein a tape reel assembly and a lower second compartment for accommodating therein a slide, a side wall portion of the casing juxtaposed to the first compartment including a first recess for making the tape accessible for coaction with a tape driving means and a second recess spaced apart from the first recess for making the tape accessible for coaction with a sound head or an erase head, one of the wall portions of the casing adjacent to the second compartment including an elongate slot for removal of a slide out of the second compartment and return of the slide into the second compartment;

a tape reel assembly including an elongate pivot means with the first compartment of said casing extending from a wall portion thereof; a tape supply reel and a tape take-up reel rotatable about said pivot means in superimposed relationship, one of said reels having a tubular hub rotatably seated on said pivot means and the other reel having a tubular hub rotatably seated on the hub of said one reel, said pivot means and hubs constituting elongate bearings for the reels, each of said tubular hubs including a radially protruding peripheral flange, the flange on the hub of said one reel being disposed at the hub end adjacent to said end wall portion, and the flange on the hub of said other reel being disposed intermediate the length of said hub, said flanges constituting guide and support surfaces for tape wound on said reels; a coil spring wound upon the hub of said other reel, one end of said spring being secured to one reel and the other end to the other reel, said spring being preloaded to bias the reels for turning in opposite directions; and magnetic tape, each end of said tape being attached to one of said reels and a portion of the tape extending between said reels, said spring biasing the reels in opposite direction and toward an angular position relative to each other in which said tape portion is continuously held taut when and while the tape is being wound from one reel upon the other reel and when and while said reels are at standstill.

3,861,796

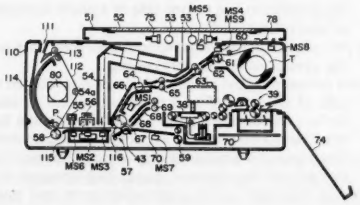
ELECTROPHOTOGRAPHIC COPYING MACHINE

Susumu Tanaka, Sakai; Yuji Enoguchi, Higashiosaka, and Isao Iizaka, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Dec. 29, 1971, Ser. No. 213,377

Int. Cl. G03g *15/22*

U.S. Cl. 355—8 **4 Claims**



1. An electrophotographic copying machine of the transfer type, comprising:

a carriage mounted to reciprocate along the top surface of the housing of said copying machine and including a transparent plate for supporting an original thereon;

an exposure device including an exposure window and an optical system for projecting a mirror image of said original placed on said transparent plate to said exposure window;

a conveying path along the imaging plane of said optical system and in parallel with said carriage;

a flexible sheet-like photosensitive member movable along said conveying path;

a charging device facing said photosensitive member, a transfer roller for contacting said photosensitive member, said charging device and said roller being mounted along said conveying path on opposite sides of said exposure window;

means for supplying sheet-like transfer material for receiving the image on said photosensitive member;

means for separating said sheet-like material from said photosensitive member;

a driving member for moving said photosensitive member to confront said charging device, said exposure window, said transfer roller and said means for separating, and also to another position where it is separated thereform;

a guide member and a supplying member for feeding said transfer material from said means for susplying onto said photosensitive member and located between said transfer roller and said exposure window;

a member for transporting said separated transfer material towards a development device;

an arcuate guide path disposed on the extension of said conveying path internally in the housing of the copying machine whereby said photosensitive member is thereby curved and guided therealong at the time when said photosensitive member is moved along said conveying path towards its location away from said charging device, said exposure window and said transfer roller.

3,861,797

APPARATUS FOR OBTAINING COPIES EXPANDED OR CONSTRACTED IN ONE DIRECTION

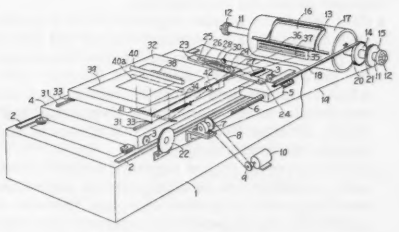
Humihiko Nishida, Kyoto, and Takeo Furutaka, Mino, both of Japan, assignors to Dainippon Screen Seiza Kabushiki-Kaisha, Kyoto, Japan and Dainippon Insatsu Kabushiki-Kaisha, Tokyo, Japan

Filed Apr. 18, 1973, Ser. No. 352,117

Claims priority, application Japan, Apr. 24, 1972, 47-41029; Feb. 6, 1973, 48-14283

Int. Cl. G03b *27/68*

U.S. Cl. 355—52 **11 Claims**



2. A copying apparatus for obtaining copied images which are changed in scale in only one dimension comprising:

1. a bed for carrying the copying apparatus;

2. a first movable table attached to said bed and linearly movable with respect thereto, adapted to transport an original document relative to an image plane, in a first linear direction;

3. a second movable table, attached to said first movable table, being superposed thereon, carrying said document to be linearly movable with respect thereto in said first linear direction;

4. scanning means for applying the image of an original document to a remotely located sensitive medium in synchronism with the motion of said first table; and

5. adjustable scaling means coupled to said scanning means and said second movable table for imparting linear mo-

tion to said second table during movement of said first table,

whereby the net motion of the original document relative to said bed, varies the scale of the image at the sensitive medium in one direction.

3,861,798

MASK FOR ALIGNING PATTERNS

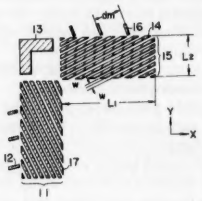
Kazunari Kobayashi, Hachioji; Hisayuki Higuchi, and Michiyoshi Maki, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 21, 1973, Ser. No. 362,361

Claims priority, application Japan, May 22, 1972, 47-19916; May 14, 1973, 48-53397

Int. Cl. G03b 27/52

U.S. Cl. 355—61 **10 Claims**



1. A mask for aligning patterns, comprising:

a first group of patterns disposed on a first base member, said first group consisting of

a first pattern for pre-alignment,

a first pattern for precise alignment which comprises a plurality of first stripes disposed at equal intervals and parallel to one another, and

a second pattern for precise alignment which comprises a plurality of second stripes disposed at equal intervals and parallel to one another, the direction of said second stripes differing from that of said first stripes of said first pattern for precise alignment;

a second group of patterns disposed on a second base member, said second group consisting of

a second pattern for pre-alignment,

a third pattern for precise alignment which is provided at such a position as to be superposed on said first pattern for precise alignment when said first and second patterns for pre-alignment are superposed on each other and which comprises third stripes disposed at equal intervals and parallel to one another, the direction of said third stripes differing from that of first stripes of said first pattern for precise alignment, and

a fourth pattern for precise alignment which is provided at such a position as to be superposed on said second pattern for precise alignment when said first and second patterns for pre-alignment are superposed on each other and which comprises fourth stripes disposed at equal intervals and parallel to one another, the direction of said fourth stripes differing from that of said second stripes of said second pattern for precise alignment;

a first reference pattern disposed in the vicinity of one of said first and third patterns for precise alignment, and a second reference pattern disposed in the vicinity of one of said second and fourth patterns for precise alignment;

whereby upon alignment with each other, said first pattern for pre-alignment and said second pattern for pre-alignment produce first Moire fringes, and said first pattern for precise alignment and said third pattern for precise alignment, and said second pattern for precise alignment and said fourth pattern for precise alignment, respectively, produce second Moire fringes,

the spacing of said first Moire fringes being adjustable to coincide with said first reference pattern and the spacing of said second Moire fringes being adjustable to coincide with said second reference pattern.

3,861,799

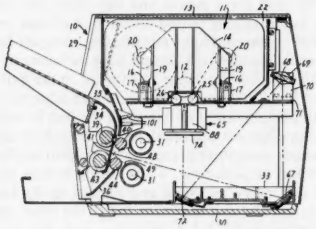
CAMERA

Earl Chiswell, Bloomington, and Clarence O. McMaster, Mahtomedi, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 26, 1973, Ser. No. 326,980

Int. Cl. G03b 27/32

U.S. Cl. 355—64 **7 Claims**



1. In a document flow camera having a transport including drive means for advancing a document into the camera past an exposure station and exiting the document, means for synchronizing the movement of a film upon advancement of the document to photograph successive image areas of the document at the exposure station onto the film at a focal plane, and lamp means for exposing to light the successive areas of the document as it is moved through the exposure station, which exposure station comprises

a pair of parallel transport rollers disposed in spaced relation,

means defining a planar surface positioned for receiving light directly from said lamp means, said planar surface being disposed between the rollers and extending generally parallel to and on one side of a plane through the axis of said rollers, and

a pair of pressure rollers disposed with their axes parallel to the axes of said transport rollers,

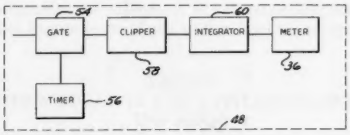
said pressure rollers having their axes disposed on the same side of the axes of said transport rollers as said planar surface and disposed apart a distance less than the spatial relationship between the axes of the transport rollers such that a line connecting the axis of each transport roller and the axis of the opposed contacting pressure roller will converge with a line perpendicular to and intersecting said planar surface between said pressure rollers eliminating the need for guide plates on both sides of the document path at the exposure station,

whereby a document as it is transported between an opposed first pressure roller and a first transport roller the leading edge follows a line tangential to both said opposed rollers and the paper is directed against said planar surface and the successive areas of said document are exposed to light directly from said lamp means and are maintained against said planar surface in a constant focal plane as the successive areas are moved across the planar surface.

3,861,800
PARTICLE COUNTER INDEPENDENT OF FLOW RATE

Edward J. Rapoza, Butler, N.J., and Keith Watson, Del Mar, Calif., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Filed July 27, 1972, Ser. No. 275,864
Int. Cl. G01n 31/16
U.S. Cl. 356—39 3 Claims



1. A method for counting the number of particles per unit volume suspended in a fluid, said particles having a detectable characteristic differing from the fluid, comprising the steps of:

passing the fluid through a sensing means;

sensing the detectable characteristic of the particles as the particles pass through the sensing means;

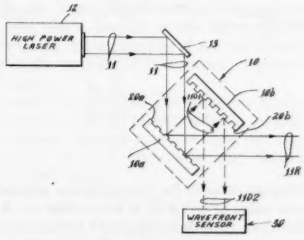
providing pulses responsive to the sensing of the detectable characteristic when a threshold level is exceeded, each said pulse having an amplitude limited to a specified level and a width related to the time during which the particle is being sensed; and

integrating the pulses over a fixed period of time to obtain a signal corresponding to the number of particles per unit volume of the fluid so that the signal is independent of flow rate and volume of fluid passed through the sensing means and substantially independent of particle size.

3,861,801
DEVICE FOR SAMPLING LASER BEAMS

William N. Peters, Ridgefield, and Eugene R. Schlesinger, Wilton, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed June 18, 1973, Ser. No. 371,190
Int. Cl. G01j 3/18
U.S. Cl. 356—74 5 Claims

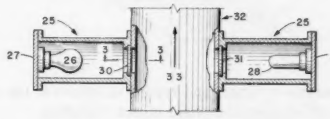


1. A device for taking a sample from a beam of light, such as a laser beam, without altering the phase or intensity of the main beam exiting from the device, said device comprising first and second diffraction gratings mounted in parallel spaced relation, the opposed surfaces of the gratings having rulings thereon, the rulings on both gratings having the same period, the rulings on the first grating being such as to specularly reflect a substantial portion and to diffract a minor portion of the beam of light impinging thereon while the rulings on the second grating are such as to diffract the major portion of a beam of light impinging on it, the gratings being positioned for a beam of light that is being sampled to impinge on the ruled surface of the first grating at an angle less than 90° and being spaced apart at least enough for the specularly reflected portion of the said beam from the first grating to be reflected out, unobstructed, from between the gratings as the main beam exiting from the device, while the portion of said beam diffracted from the first grating impinges on the second grating at an angle such that at least a portion of the diffracted beam portion impinging on the second grating is diffracted therefrom out from between the gratings, whereby the double diffracted portion of said beam, which is the sample portion, leaves the second grating in a path parallel to the path of the beam impinging on the first grating and retains the amplitude and phase of the beam initially directed to the first grating.

3,861,802
AN IMPROVED TURBIDIMETER LENS FOR REDUCING THE TENDENCY OF MIXTURES OF IMMISCIBLE FLUIDS TO FORM FILMS OF THE LENSES

Clinton A. Belmear, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed July 2, 1973, Ser. No. 375,402
Int. Cl. G01n 21/26
U.S. Cl. 356—208 7 Claims

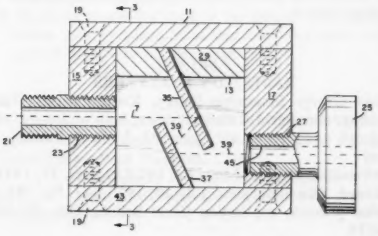


1. In a turbidimeter having a light source and a light sensor for determining the turbidity of liquids, the improvement comprising separating said light source and said light sensor from said liquids with a fluorocarbon resin lens which allows the passage of light therethrough, thereby minimizing the tendency of said liquids to form films on said lenses.

3,861,803
GUNSIGHT

Burdette W. Sallans, R.F.D. No. 1, Salem, N.Y. 12865

Filed Sept. 26, 1973, Ser. No. 400,840
Int. Cl. F41g 1/30
U.S. Cl. 356—254 8 Claims



1. A gunsight for use with one of the sights of a firearm to neutralize, and render clear and distinct, both the view of the target sighted and the front sight of the firearm, to thereby enable the firearm user to view the sighted target and front sight clearly, distinctly and consistently, said gunsight comprising first and second reflecting surfaces structurally arranged and disposed such that the sight line from the target is reflected from said first reflecting surface to said second reflecting surface and is reflected from said second reflecting surface to the viewing eye of the firearm user with the view of the sighted target and front sight being neutralized, and rendered clear and distinct, wherein said first and second reflecting surfaces are parallel to each other, wherein the sight line from the sighted target strikes said first reflecting surface at an angle of incidence of 25° and wherein the reflected ray of the

sight line from said first reflecting surface strikes said second reflecting surface at an angle of incidence of 25°.

3,861,804

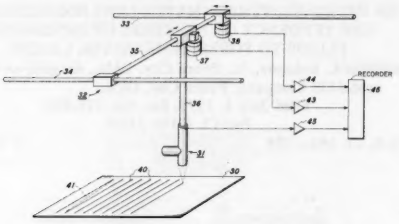
INFEROMETRY READOUT OF PHASE INFORMATION

Donald R. Lehmbeck, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 130,360, April 1, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 336,136

Int. Cl. G01b *7/02*

U.S. Cl. 356—108 **2 Claims**



1. Apparatus to detect and record variations in the optical thickness of an extended phase object, including:

a source of temporally coherent light,

optical means to direct said light onto a phase object and to image the reflections of said light from said object,

a first electric motor operatively connected to said optical means to reciprocate the same in an X direction,

a second electric motor operatively connected to said optical means to reciprocate the same in a Y direction,

an electrical photodetector in optical communication with said image of said object and responsive to intensity variations thereof to generate intensity signals,

a recorder operatively connected to said photodetector, said first motor, and said second motor to record intensity signals from said photodetector and position signals from said motors, and

a visual display device operatively connected to said recorder to convert electrical signals from said recorder to a visible two dimensional contour representation of said phase object.

3,861,805

RADIATION ANALYZERS

Anthony George Montague Emery, Kent; Charles Walter Munday, and David Roland Weaver, both of Surrey, all of England, assignors to BP Chemicals Limited, London, England

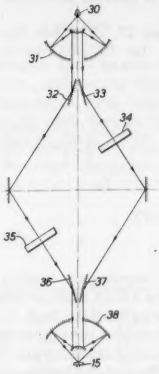
Continuation-in-part of Ser. No. 192,819, Oct. 27, 1971, abandoned. This application July 20, 1973, Ser. No. 381,271

Claims priority, application Great Britain, Oct. 29, 1974, 51394/74

Int. Cl. G01n *21/40*

U.S. Cl. 356—116 **4 Claims**

1. A method for analysis comprising generating two separate, polarized beams of radiation, directing one of said beams through a first lithium niobate crystal and directing the other of said beams through a second lithium niobate crystal, maintaining each of said crystals at a temperature below 50°C while modulating each beam by applying out of phase, square wave form, electrical voltages to said crystals, a voltage of one phase being applied to one of said crystals and the voltage of a different phase being applied to the other of said crystals, directing said beams on a detector of said radiation to provide a complex electrical signal at the output of said detector which has a square wave form but a fundamental alternating wave form which varies in phase depending upon the relative absorption of the two beams prior to being directed on said detector, converting said fundamental wave form signal to a square wave form signal, and automatically measuring the phase shift of said fundamental wave by starting a counter at



times having a predetermined time relation to one of said square wave form voltages and stopping said counter at times having a predetermined time relation to said square wave form signal.

3,861,806

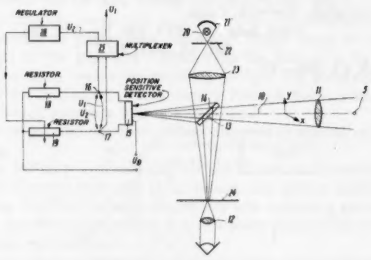
SIGHTING GONIOMETER

Gunthard Born, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm, Munich, Germany

Filed Nov. 9, 1972, Ser. No. 305,003

Int. Cl. G01b *11/26*

U.S. Cl. 356—152 **1 Claim**



1. A sighting goniometer for measuring the angular position of a luminous point in terms of at least either an X or Y orthogonal direction relative to a sighted object, comprising a partially transparent prism having a filter layer positioned in a sighting axis and located between an objective lens and a focal plane, a position sensitive detector adapted to produce voltage levels in response to light impinging thereon between terminal points, said voltage levels being proportional to the displacement of said luminous point from said sighting axis and in terms of at least either said X or Y orthogonal directions, electrical resistance means having at least one adjustable resistor therein connected in circuit with said position sensitive detector to exactly control the location of the respective zero axis position of either said X or Y orthogonal directions, a modulatable lamp adapted to be modulated by at least either a frequency modulation or a phase modulation and a focusing mirror for producing a light beam, said light beam being transmitted to said position sensitive detector to produce a voltage level $U_{(1)}$ and to a sighting point on said focal

plane through means defining a perforated screen and an optical system, said light from said luminous point being also transmitted to said position sensitive detector to produce a voltage level $U_{(2)}$, means defining a multiplexer connected in circuit with said position sensitive detector and adapted to receive both of said voltage levels $U_{(1)}$ and $U_{(2)}$ from said position sensitive detector and to separate said voltage level $U_{(1)}$ from said voltage level $U_{(2)}$, means defining a regulator connected in circuit with said multiplexer means and adapted to receive said voltage level $U_{(2)}$ from said multiplexer means and to control the adjustment of said adjustable resistor in response thereto to cause said voltage level $U_{(2)}$ to equal zero.

3,861,807
POSITION LOCATING AND MAINTAINING METHOD AND MEANS

Charles Lescrenier, 660 Crescent Ct., Wauwatosa, Wis. 53213
Filed Aug. 17, 1972, Ser. No. 281,521
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 **51 Claims**

1. A device for establishing the location of a first object with respect to a second object comprising:

light source means for generating a diffuse beam of concentrically patterned light bearing a predetermined relationship to said first object and for applying same to said second object, said diffuse beam having a varying intensity from the center to the extremities thereof;

a reflecting target substantially smaller in dimension than the diffuse beam of light mounted on said second object for reflecting a portion of the beam of concentrically patterned light, the intensity of the reflection being indicative of the position of said second object in the diffuse light beam;

a light sensor for receiving the reflection of the target and for providing a signal proportional to its intensity; and

control means responsive to the light intensity signal for indicating the locational relationship between the first and second objects.

3,861,808
INSTRUMENT FOR MEASURING CURVED SURFACES

Edmund R. Halsey, 267 Westport Rd., Wilton, Conn. 06895
Filed Dec. 4, 1972, Ser. No. 311,852
Int. Cl. G01b *11/04, 9/00*
U.S. Cl. 356—169 **21 Claims**

1. An optical instrument for measuring the curvature of surfaces comprising

A. an eyepiece lens;

B. an objective lens positioned substantially on the same optical axis as said eyepiece lens;

C. holder means for positioning a curved surface to be measured in alignment with the optical axis of said lenses;

D. means for projecting a target pattern from the surface to be measured;

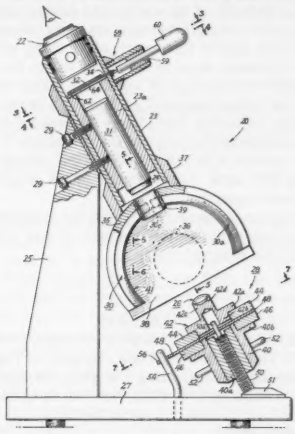
E. a first reticle member between said eyepiece lens and said objective lens,

1. said first reticle member having a pattern forming a moire fringe pattern when said target pattern is superimposed thereon;

F. a second calibrated reticle member closely spaced to said first reticle member,

1. said second reticle member having a pattern forming a moire fringe pattern when said target pattern is superimposed thereon,

2. said second reticle member being marked adjacent said moire fringe forming pattern for ascertaining curvature characteristics of the surface to be measured, said markings being visible through said eyepiece,



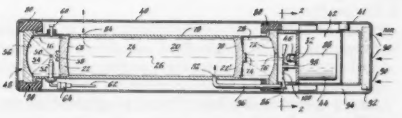
3. said second reticle member pattern being positioned adjacent said first reticle member pattern for side-by-side comparison of the density and sharpness of the moire fringe formed by each reticle pattern and said target pattern for precisely indicating the focusing of the instrument on said surface to be measured;

G. means for moving said second calibrated reticle member to vary the pattern with respect to the target pattern superimposed thereon, and

H. focusing means for varying the optical relationship between said eyepiece lens, said objective lens and said curved surface to be measured.

3,861,809
CONFOCAL CAVITY OPTICAL GAS SENSOR

Joseph F. Hall, Jr., Santa Ana, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Apr. 6, 1973, Ser. No. 348,645
Int. Cl. G01j *3/48;* **G01n** *21/22*
U.S. Cl. 356—188 **6 Claims**



1. An apparatus for detecting a particular gas in a gaseous mixture by utilizing light energy of a wavelength tending to be absorbed by the particular gas comprising:

a confocal light cavity sized to contain a measurable quantity of the particular gas, said confocal cavity being formed by a pair of opposing reflectors mounted in spaced apart coaxial relation in a housing to define a gas chamber cavity therebetween, said reflectors being par-

tially transmissive and adapted to reflect the major portions of light impinging thereon, the opposing faces of said reflectors being substantially spherical surface segments;

light source means for producing a single collimated beam of light that includes light energy in an absorption band of the particular gas and reference light energy effectively outside of said absorption band; said light source means being mounted for directing said beam coaxially through one of the reflectors into said cavity, said light source means and said one reflector being dimensioned so that said beam directed into said cavity fills the major portion of the diameter of the cavity, and said opposing substantially spherical, surface segments being of equal radius of curvature spaced from each other along their common axis a distance equal to twice said radius for a maximum number of reflections of said beam within the cavity;

means for introducing said gas into said cavity;

means for collecting light energy transmitted out from said cavity through the other of said reflectors;

means responsive to the collected light energy for producing a first signal representative of the magnitude of the collected light; and

means responsive to said first signal for producing an output signal indicative of the amount of said particular gas within the confocal cavity.

3,861,810

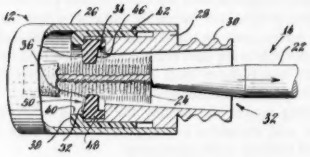
PORTAL SEAL AND WIPER FOR PRODUCT CONTAINER

Martin M. Vasas, Fairfield, Conn., assignor to The Bridgeport Metal Goods Manufacturing Company, Bridgeport, Conn.

Filed Sept. 4, 1973, Ser. No. 394,084

Int. Cl. A45d *39/16*

U.S. Cl. 401—122 **12 Claims**



3. A sealing gland for use in a reservoir assembly to establish a peripheral seal therein around a portal bushing and a portal seal about an applicator which passes therethrough when the reservoir assembly is utilized as part of a product container, said sealing gland being fabricated of elastomeric material and comprising:

a tubular frame;

an annular lip disposed on the interior wall of said tubular frame and to one longitudinal end thereof, said annular lip being interlockable to the bushing and radially compressible within the reservoir assembly to develop sealing forces against said tubular frame in establishing the peripheral seal; and

a sealing and wiping diaphragm disposed across the other end of said tubular frame, said diaphragm being an annular ring, said annular ring having a face extending perpendicularly to the annular axis at one axial end thereof, said face having embossed strips extending radially thereacross, said strips being separated by arcuate segments of relatively increased flexibility, said arcuate segments cooperating with said embossed strips to provide an irregular wiping action peripherally about the annular axis.

3,861,811

FERRULES ON ROPE OR STRAND

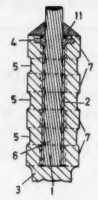
Thomas Ernest Mason, Doncaster; Cyril Fox, Clayworth near Doncaster, and Robert Edward Campbell, Doncaster, all of England, assignors to British Ropes Limited, Doncaster, Yorkshire, England

Filed June 20, 1972, Ser. No. 264,417

Claims priority, application Great Britain, June 21, 1971, 28974/71

Int. Cl. F16b *1/00*

U.S. Cl. 403—41 **7 Claims**



1. A ferrule on a wire rope or strand, in which a part of the rope or strand is enclosed by a tubular member within a bore in a ferrule body and by an annular element adjacent the end of the tubular member in at least one open end of the bore, the ferrule body being radially compressed so as to radially deform the tubular member and the annular element into gripping engagement with the rope or strand, at least the radially inner part of the tubular member being of a ductile material which before compaction has a hardness less than that of the external wires of the rope or strand, the ferrule body being of metal which before compaction has a hardness greater than that of the ductile material of the radially inner part of the tubular member, the annular element being of a plastically deformable material which before and after compaction has a hardness which is less than that of the ductile material of the radially inner part of the tubular member, the annular element serving as a seal between the rope or strand and the ferrule body.

3,861,812

BALL JOINT

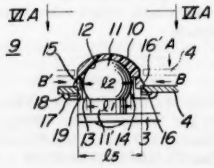
Isao Ito, Handa, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed July 19, 1972, Ser. No. 273,127

Claims priority, application Japan, July 26, 1971, 46-66228[U]

Int. Cl. F16c *11/06*

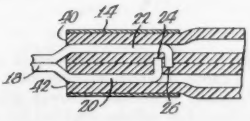
U.S. Cl. 403—71 **5 Claims**



1. A ball joint including a coupling ball, a first member on which said ball is mounted, a socket having a body formed therein with a recess which rotatably receives said ball, said socket body including a first peripheral wall portion adjacent the peripheral edge of said recess, said first peripheral wall portion being formed with a plurality of circumferentially spaced notches dividing at least a part of said peripheral wall portion into a plurality of segments, and a second wall portion providing a bottom of said recess, and a second member on which said socket is mounted, wherein said socket is provided with resiliently deformable arms which secure said socket to

said second member by virtue of the resilient spring force of said arms acting on said second member, said second member being formed with an opening in which said socket body is received at its portion adjacent the peripheral edge of said recess, wherein said arms comprise a first and second group of arms, each of the arms of said first group being integral with and extending radially outwardly from one of said segments, said second group of arms being integral with and extending from said second wall portion of said body toward said first group of arms, each of said second group of arms having a radially outwardly and obliquely extending inclined outer surface and an inner surface radially outwardly spaced by a gap from the radially outer peripheral surface of said first peripheral wall portion of said socket body, said inner surface being radially inwardly offset from the outermost end of said inclined outer surface to cooperate therewith to define therebetween a shoulder, each of said first group of arms terminating in an end turned toward said second group of arms to cooperate with said shoulder to resiliently grip said second member between said turned end and said shoulder, the arrangement being such that said peripheral edge of said recess is restrained by the peripheral edge of said opening in said second member against expansion beyond a diameter equal to the largest diameter of said ball.

3,861,813
LANYARD JOINT CONSTRUCTION
Suren M. Seron, Joliet, Ill., assignor to Seron Mfg. Co.
Filed Nov. 14, 1973, Ser. No. 415,549
Int. Cl. F16b *7/04*
U.S. Cl. 403—216 **4 Claims**



1. A lanyard comprising: a wire formed of metal or the like having its center formed to define a retaining means, its ends directed generally laterally oppositely, and intermediate portions extending from said center to respective ones of said ends in generally parallel relationship; an elongated tube of flexible material, said flexible material being softer than the material of which said wire is formed whereby the latter may pierce the former; respective ends of said wires being received in respective ends of said tube and each wire end positioned to extend at least partially through the side wall of the tubing end in which it is received, and a ferrule surrounding and clamping said tubing ends sufficiently tightly to hold said wire ends in said positions in said side walls.

3,861,814
COUPLER FOR LINE MEMBERS
Sidney L. Fisher, 3115 Mt. View Dr., N., Renton, Wash. 98055
Filed Sept. 7, 1973, Ser. No. 395,223
Int. Cl. F16g *11/14*
U.S. Cl. 403—300 **1 Claim**

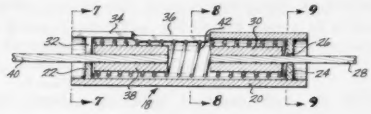
1. A coupler for connecting together first and second line members which in use are in tension, said coupler comprising: a tubular body to be carried by a first of said line members, including a pair of end walls and side wall means together defining an inner chamber;

a slot in one of said end walls for receiving said second line;

a key hole opening in said side wall means formed by a relatively large opening and a relatively narrow opening connecting said relatively large opening with said slot;

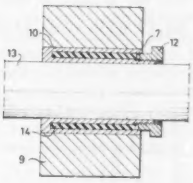
said key hole opening being adapted to receive a head member carried by the second line member, said head member being sized to pass through said relatively large opening but not through either said relatively narrow opening or said slot; and

a coil spring being contained within said inner chamber and normally occupying a position in which a portion of its convolutions extend laterally across the key hole opening, said spring being retractable so that said head member and attached second line member being adapted to be inserted through the relatively large opening into the inner chamber, and adapted to be moved through the



relatively narrow opening into said slot, and said spring being adapted to be extended to enclose said head member and serve as a guard, preventing the inadvertent removal of said head member out from the key hole opening, with the coil spring diameter being substantially larger than the width of said relatively large opening, so that a lateral force on the coil spring by said second end member in the direction of said relatively large opening will not push said coil spring out through said opening, and with said coil spring being sufficiently distortable so that it can be retracted and its end convolution pulled out through said relatively large opening, and the coil spring being adapted to rotate for the purpose of screwing it out from said inner chamber through said key hole opening.

3,861,815
ARRANGEMENT FOR RELEASABLY MOUNTING OF A HUB OR A WHEEL ON A SHAFT
Kjell Gustav Landaeus, Stora Tomagaten 29 22351, Lund, Sweden
Filed Dec. 4, 1972, Ser. No. 311,547
Int. Cl. F16d *1/06*
U.S. Cl. 403—370 **10 Claims**

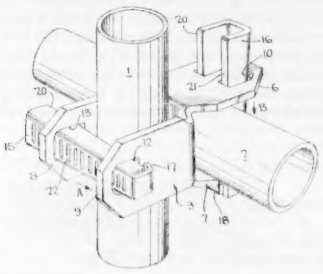


1. Arrangement for releasably mounting a wheel or the like on a shaft, the arrangement comprising, a sleeve having double walled sidewalls adapted to be located between the wheel and shaft forming a recess between the sleeve double sidewalls, said sleeve being closed at one end, an elastic pressure medium enclosed in the recess, the radial dimension of the double walled sidewalls being variable by changing the pressure on the pressure medium in said recess, a piston displaceably mounted in the recess resting against the pressure medium to act thereon for changing the pressure thereagainst, means, including the double walled sidewalls of the sleeve and piston being directly connected to each other such that application of an axial force upon the piston operates against the pressure medium and is reacted by a reaction force extending only through the sleeve.

3,861,816
COUPLING FOR TUBULAR SCAFFOLDING

Joseph Maurice Zaidan, Farra Building Solh St., Beirut, Lebanon

Filed Sept. 20, 1973, Ser. No. 399,156
Int. Cl. F16b 7/00
U.S. Cl. 403—385 5 Claims

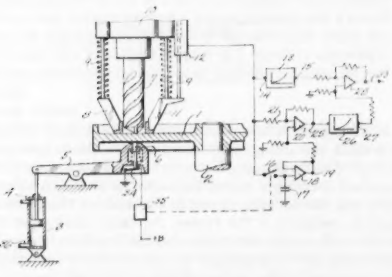


1. A coupling for tubular scaffolding comprising, a central link, two pairs of arms projecting from the link in opposite directions, each pair of arms being arranged to embrace a respective one of two mutually inclined scaffolding tubes, apertures in each of the arms, and a pair of notched wedges each being generally U-shaped in transverse cross-section, each of said wedges projecting through the apertures in respective ones of the pairs of arms and arranged so that the free edges of the U-shaped cross-section bear upon a scaffolding tube embraced by the pair of arms whereby the two scaffolding tubes can be locked together and each of said wedges having a plurality of notches in the bottom of the U-shaped cross-section, said notches being arranged to bear against said arms thereby locking said wedges within said apertures in said arms.

3,861,817
METHOD AND DEVICE FOR REMOVING MATERIAL FROM WORKPIECES, PARTICULARLY FOR THE APPLICATION OF CORRECTION IN BALANCING

Richard Muller, Worfelden, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany

Filed Oct. 5, 1973, Ser. No. 403,856
Claims priority, application Germany, Dec. 4, 1972, 2259268
Int. Cl. B23b 49/00, 35/00
U.S. Cl. 408—1 6 Claims



1. A method for the elimination of material from workpieces to correct imbalance by cutting off material comprising advancing a rotating cutter into a workpiece,

sensing the depth of advance of the cutter and generating a first electrical signal proportionate to the advance,

producing a second electrical signal proportionate to the material removed from said signal proportionate to the advance,

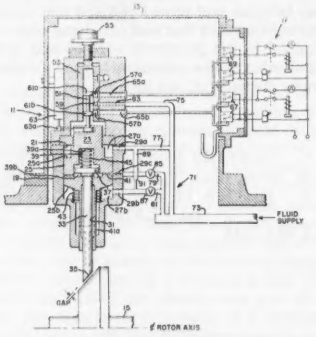
sensing the perforation of the workpiece and subsequently generating a third signal proportionate to the advance from the moment of perforation on, and

subtracting the third signal from said first signal to cause said second signal to be proportional to the material actually drilled off after penetration through the workpiece.

3,861,818
THRUST WEAR DETECTOR

Markus A. Eggenberger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 14, 1974, Ser. No. 442,507
Int. Cl. F01b 25/00, 25/26
U.S. Cl. 415—14 7 Claims



1. A device for following the axial movement of a rotating shaft including a casing mounted adjacent the rotating shaft having a hydraulically positioned follower piston slidably mounted within the casing defining opposite first and second chambers; the device further comprising:

a piston nozzle slidably mounted within the follower piston, the piston nozzle having an open end closely adjacent the rotating shaft defining a hydraulic gap therebetween; the first chamber in fluid communication with the second chamber and the second chamber in fluid communication with the piston nozzle and hydraulic gap;

a collar formed on the piston nozzle defining an internal chamber within the follower piston;

means for selectively introducing hydraulic fluid into the internal chamber; and,

means biasing the piston nozzle against the follower piston.

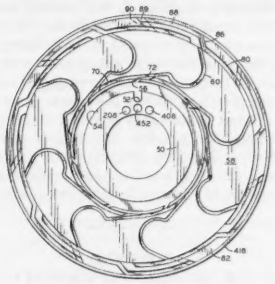
3,861,819
MOTOR CONSTRUCTION

Robert G. Bandy, 10206 Lima Rd., Fort Wayne, Ind. 46808

Filed Aug. 6, 1973, Ser. No. 385,995
Int. Cl. F01d 1/12
U.S. Cl. 415—52 11 Claims

1. An improved fluid actuated motor comprising a relatively stationary inner annular member, a rotor dimensioned for rotatable movement in closely fitting relation with said inner annular member, and a relatively fixed annular outer member constructed to be in closely fitting relation with the outer periphery of said rotor, air inlet means forming a part of said inner annular member and including outlet passages opening at the outer peripheral surfaces of said inner annular member, a plurality of circumferentially spaced passage means connecting with said inlet passages of said inner annular member and extending in both tangential and looped radial directions within said rotor and terminating in outlets communicating

with said outer annular member for receiving the flow from said passage means of the rotor and constructed to direct such outlet flow of air in an opposing radial direction through said rotor, coacting passage means in said rotor adapted to receive



such reverse radial flow and including both tangential and looped radial passageways adapted to terminate in an exit flow into a coacting passageway of said inner radial direction and thereby develop additional tangential pulses for powering the rotor in a circumferential direction.

3,861,820

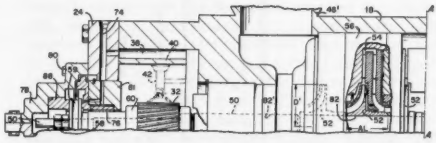
CENTRIFUGAL GAS COMPRESSOR UNIT

Hanns Hornschuch, Easton, Pa., assignor to Ingersoll-Rand Company, Woodcliffe, N.J.

Division of Ser. No. 349,656, April 10, 1973, Pat. No. 3,826,587. This application Feb. 22, 1974, Ser. No. 444,739

Int. Cl. F01d *13/02*; **F04d** *17/12*

U.S. Cl. 415—64 **3 Claims**



1. A centrifugal gas compressor unit, comprising:

a plurality of separate, gas compressor housings;

a plurality of successive gas compressing stages within each of said housings;

means for admitting gas to a first of said housings;

means for discharging compressed gas from a last of said housings;

means for communicating gas between each of said housings for successive gas compression;

said stages each comprising a bladed gas compressor impeller and vaned diffusor;

a shaft confined within each of said housings rotatably supporting said impellers; and

bearing means interposed between each of said shafts and housings for supporting said shafts for rotation; wherein at least one of said impeller shafts is substantially circular in cross-section, having a central locus and at least one portion on the circumferential surface thereof which is eccentric, defining of said circumferential surface a first segment located a first radial distance from said locus, and a second segment located a second radial distance from said locus:

at least one of said impellers of said one shaft has a substantially circular shaft mounting hole formed therein, said mounting hole having a radial center and at least one portion on the circumferential surface of said mounting hole which is eccentric, defining of said latter circumferential surface a first arcuate portion located a first radial distance from said center; and a second arcuate portion located a second radial distance from said center; and

said shaft circumferential surface and said impeller mounting hole dimensionally define a mutual, slidable engagement and interface, upon one of said first and second segments being disposed in common, radial alignment and juxtaposition with one of said first and second arcuate portions, and define a torqued, interference fit, upon a portion of said second segment being disposed in common, radial alignment and juxtaposition with a portion of said first arcuate portion.

3,861,821

DEVICE FOR PRODUCING ANGULAR MOMENTUM IN A FLOW OF WORKING FLUID UPSTREAM OF THE FIRST ROTOR BLADE OF AN AXIAL-FLOW TURBOMACHINE

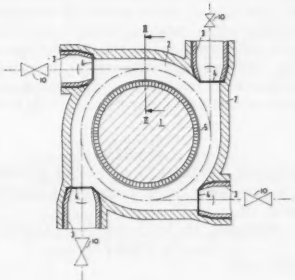
Herbert Keller; Bruno Krieg, and Ludwig Romer, all of Mulheim, Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim(Ruhr), Germany

Filed Mar. 14, 1973, Ser. No. 341,295

Claims priority, application Germany, Mar. 17, 1972, 2213071

Int. Cl. F01d *3/02, 1/02, 9/00*

U.S. Cl. 415—101 **2 Claims**



1. An axial flow turbine comprising rotor blade and guide vane rings alternately following one another in axial direction and having means for producing angular momentum for an incoming steam flow in front of the first rotor blade ring, comprising an annulus immediately in front of the first rotor blade ring, said annulus extending radially inward substantially to the radially inner ends of the rotor blades in said first rotor blade ring, and said annulus extending radially outward and continuously over an entire circumference, a plurality of steam inlets discharging tangentially into said annulus, each steam inlet having an individual and independent controllable throttle valve for regulating the amount of steam.

3,861,822

DUCT WITH VANES HAVING SELECTIVELY VARIABLE PITCH

Robert P. Wanger, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 27, 1974, Ser. No. 446,231

Int. Cl. F04d *29/56*

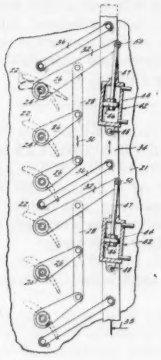
U.S. Cl. 415—147 **9 Claims**

1. A duct of the type having an annular flow passage defined interiorly thereof, the duct comprising:

a. an actuation ring mounted for circumferential movement relative to said duct;

b. a plurality of variable pitch vanes disposed in said annular flow passage wherein each said vane includes a vane lever arm for varying the pitch of said vane in response to arcuate movement of said vane lever arm;

c. a plurality of sector actuation segments wherein each said segment is pivotably mounted to predetermined numbers of said vane lever arms for moving said vane lever arms arcuately in response to circumferential movement of said sector actuation segment; and



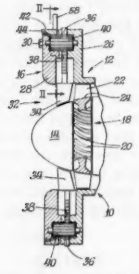
d. a plurality of actuation means corresponding in number to said plurality of sector actuation segments wherein each said actuation means cooperates with said actuation ring and said corresponding sector actuation segment for moving said corresponding sector actuation segment circumferentially relative to said actuation ring whereby the pitch of said vanes may be selectively varied.

3,861,823

COMPRESSOR WITH RETRACTABLE GUIDE VANES

George K. Serovy, Ames, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 15, 1973, Ser. No. 323,936
Int. Cl. F04d *27/00*
U.S. Cl. 415—147 **5 Claims**



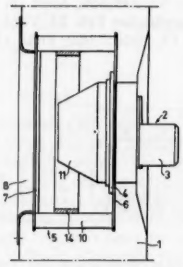
1. In a compressor having a housing, a bladed rotor rotatably associated with the housing, and means defining an annular fluid inlet passage leading into the blades of said rotor and through which said fluid passes to said rotor blades, the improvement which comprises means selectively positionable in the annular fluid inlet passage to redirect a portion of the fluid passing to said rotor blades through said annular fluid inlet passage and removable to a substantial degree from said annular fluid inlet passage, wherein the selectively positionable means are completely removable from said annular fluid inlet passage, and wherein said selectively positionable means comprise a plurality of guide vanes reciprocally associated with the housing and movable into the annular fluid inlet passage and outwardly therefrom, and means for selectively so moving said guide vanes, wherein said means for selectively moving the guide vanes into the annular fluid inlet passage and outwardly therefrom comprise a plurality of rack members, each rack member having a guide vane fixed thereto and extending inwardly therefrom, a plurality of pinion gears, each pinion gear being rotatably mounted to the housing and having the teeth thereof in engagement with the teeth of a rack member, and a ring gear rotatably mounted to the housing, each pinion gear having the teeth thereof in engagement with the teeth of the ring gear, so that rotation of the ring gear relative to the housing in one direction rotates the pinion gears to move the rack members and guide vanes attached thereto inwardly of the annular fluid inlet passage, and rotation of the ring gear relative to the housing in the other direction rotates the pinion gears to move the rack members and guide vanes attached thereto outwardly of the annular fluid inlet passage.

3,861,824

DEVICE FOR REGULATING MEDIUM FLOW, IN PARTICULAR THE FLOW OF AIR OF A RADIAL FAN

Lennart Sjoqvist, Jonkoping, and Stig Lidbamn, Huskvarna, both of Sweden, assignors to AB Svenska Flaktfabriken, Nacka, Sweden

Filed Feb. 14, 1973, Ser. No. 332,263
Claims priority, application Sweden, Feb. 25, 1972, 2335/72
Int. Cl. F04d *27/00*
U.S. Cl. 415—157 **7 Claims**



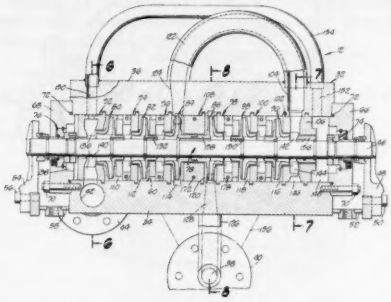
1. A device for regulating medium flow comprising a casing having a fan wheel mounted therein for rotation about a central axis, said casing having an axial inlet for the medium, said fan wheel having a radial inner wall confronting said inlet and mounting a circle of generally radially disposed blades extending axially from said wall toward said inlet in surrounding relation thereto, whereby upon rotation of said wheel, said blades effect flow of the medium through said inlet and radially outward across said blades, said blades having inner radial edges disposed in an imaginary cylindrical surface coaxial with said fan axis, andmeans for regulating the flow capacity of said wheel comprising a substantially cylindrical hollow tubular elastic ring member having an axial length less than the axial length of said blades and mounted for rotation with said fan wheel, the cylindrical surface coinciding with the imaginary cylindrical surface within said blade circle to frictionally bear against the inner radial edges of said blades, adapted to be displaced along the inner edges of the blades throughout their length whereby the capacity regulation is effected by selectively positioning the outer end of the member at a point along the length of said blades to provide a limited flow area between the outer end of said member and the inlet radially outward across said blades.

3,861,825

MULTISTAGE PUMP AND MANUFACTURING METHOD

Carl J. Blom, Los Angeles, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 99,871, Dec. 21, 1970, abandoned. This application Nov. 1, 1972, Ser. No. 302,698
Int. Cl. F04d 29/42, 17/08, 17/12
U.S. Cl. 415—198 5 Claims



1. An improved multistage centrifugal pump manufacture comprising:

a. a divided forged and formed pump housing having a generally round and elongated pumping chamber defined within said housing;

b. a pump impeller assembly having a plurality of impellers serially mounted in interference fitted relation on a rotatable shaft and mounted with said housing within said chamber;

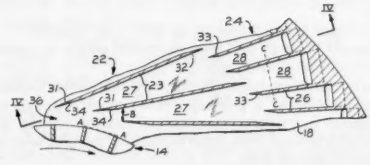
c. a plurality of interstage pump volute members comprising jointed segments, said volute members fitted around said impeller assembly and between said impellers and removably mounted in said housing and disposed within said chamber, said volute members constructed and arranged for complete separation from said housing and said impeller assembly, while retaining said impellers mounted on the shaft, upon disjointure of said segments from one another and their movement transversely of said impeller assembly and away from their locations between said impellers to positions clear of the outer periphery of said impeller assembly, wherein retainer covers are mounted within said housing and about the ends of said shaft for enclosing said chamber, and wherein seals are mounted in said retainer covers and about said shaft and means to provide an equal fluid pressure differential across said seals.

3,861,826

CASCADE DIFFUSER HAVING THIN, STRAIGHT VANES

Robert C. Dean, Jr., Norwich, Vt., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 14, 1972, Ser. No. 280,646
Int. Cl. F04d 17/08, 29/44
U.S. Cl. 415—211 1 Claim



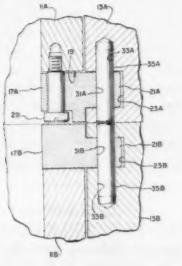
1. A cascade diffuser for providing high pressure recovery in radial flow turbomachinery having an impeller and a collector, the diffuser including generally parallel spacedapart walls normal to the axis of said impeller providing a flow path between the impeller and collector, the diffuser comprising first and second stage regions, the first and second regions each being formed by a plurality of thin vanes of constant cross-section along to length extending between the walls and being radially offset and diverging slightly with respect to each other in a downstream direction through at least a portion of the flow path with relation to the impeller to form diffuser passages between adjacent ones of the vanes which diverge relative to each other in a downstream direction toward the collector, each of the vanes being straight and having a leading edge and trailing edge, the leading edges of the first stage region vanes being spaced apart in radial relation from the impeller to provide an initial vaneless stage formed by the diffuser walls for conditioning fluid flow from the impeller prior to its entry into the first diffuser stage and intersecting fluid flow from the impeller with the leading edge of each first stage vane being tapered to provide a beveled pressure surface extending in a downstream direction and terminating generally opposite the leading edge of an adjacent first stage vane to provide a throat for the respective diffuser path through which fluid from the impeller passes to the respective diffuser paths and the trailing edges of the first stage vanes being tapered to reduce mixing losses for fluid flow between the first and second stages and the leading edges of the second stage vanes being tapered and located generally adjacent the trailing edges of the first stage vanes to reduce inlet flow blockage and being arranged in pairs between adjacent ones of the first stage vanes an axial opening in one of said parallel walls between each pair of said second region vanes at the radial outer most portion thereof providing communication between said diffuser and said collector.

3,861,827

DIAPHRAGM SUPPORT LUGS

Bayard W. Peabody, Baldwinville, Maine, and Robert F. Cericola, Greenville, S.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 12, 1974, Ser. No. 450,542
Int. Cl. F01d 25/24, 25/28
U.S. Cl. 415—219 5 Claims



1. A turbomachine including an outer casing divided along a horizontal joint into upper and lower outer casing halves and further including a diaphragm within the outer casing, the diaphragm divided into upper and lower diaphragm halves within the outer casing; and, means for mounting the diaphragm halves within their respective outer casing halves comprising:

upper and lower casing lugs mounted in a cutout portion on each side of the outer casing;

a shoulder formed on each lug;

a slot formed on each side of a respective diaphragm half, each shoulder extending into its respective diaphragm slot;

at least one substantially vertical fastener on each side of the turbomachine casing, each fastener having a portion

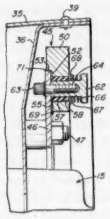
thereof positioned in at least one shoulder and another portion thereof positioned in the diaphragm whereby movement of the diaphragm relative to the outer casing is prevented.

3,861,828

AIRCRAFT PROPELLER AND VIBRATION DAMPER ASSEMBLY

David Biermann; Richard V. Grimes, both of Piqua, Ohio; Gilbert D. Howe, Vandalia, Ohio, and E. Forest Critchlow, Addison, Pa., assignors to Hartzell Propeller, Inc., Piqua, Ohio

Filed May 2, 1973, Ser. No. 356,590
Int. Cl. B64c *11/02*
U.S. Cl. 416—145 **8 Claims**



1. An aircraft propeller assembly, comprising a propeller hub including an outwardly projecting radial flange, a plurality of propeller blades projecting generally radially outwardly from said hub, means for rigidly connecting said radial flange of said hub to the shaft of an aircraft engine, an annular weight member concentrically surrounding said propeller hub and positioned at an axial location between said blades and said radial flange, a radially disposed annular support plate, means for securing the inner portion of said plate to said propeller hub, a plurality of circumferentially spaced and axially extending openings within said annular weight member, a fastener projecting through each of said openings and secured to the outer portion of said support plate, a resilient bushing disposed within each of said openings and mounted on the corresponding said fastener for supporting said weight member for slight angular movement relative to said propeller hub in response to sensing vibrational energy from the engine shaft, a friction pad positioned between said support plate and said weight member, and a set of springs mounted on said fasteners and positioned to urge said weight member towards said support plate, for substantially eliminating the transfer of vibrations from the aircraft engine shaft to said propeller blades.

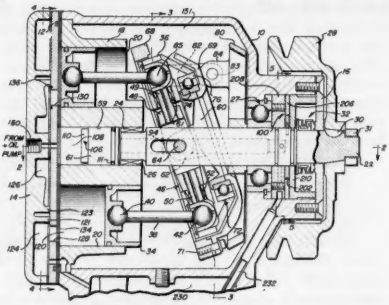
3,861,829

VARIABLE CAPACITY WOBBLE PLATE COMPRESSOR

Richard W. Roberts, Lombard, and Ralph D. Salle, Lake Zurich, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 4, 1973, Ser. No. 347,759
Int. Cl. F04b *49/00*
U.S. Cl. 417—53 **7 Claims**

1. A compressor comprising means defining a plurality of gas working spaces each having a piston cooperating with suction and discharge ports to compress a fluid therein; a drive shaft; a cam mechanism driven by said drive shaft; a wobble plate driven by said cam mechanism in a nutating path about the drive shaft axis; means operably connected between said wobble plate and the individual pistons to impart reciprocating drive to said pistons, the length of stroke being a function of the angle at which said wobble plate is supported relative to the drive axis; means for pivoting said wobble plate at a point spaced from said drive axis so as to permit said wobble plate to be inclined relative to a plane normal to said drive shaft axis, so that when the wobble plate is disposed in said normal plane, the pistons are located at top-dead-center within said gas working spaces; means for producing a substantially constant force biasing said wobble plate away from said normal plane to increase the length of stroke; a fluid tight housing enclosing said pistons and confining the fluid bypassing said pistons from said gas working spaces such that the fluid pressure in said housing is applied to the underside of each said piston to produce a force urging said wobble plate toward said normal plane; and pressure control means adapted to control the pressure in said housing in response to capacity requirements of said compressor.

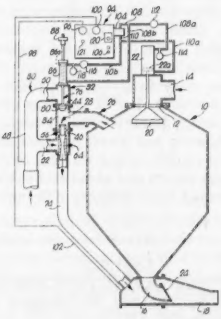


3,861,830

PRESSURE DIFFERENTIAL PUMPING SYSTEM FOR DRY BULK PRODUCTS

Ronald D. Johnson, 3516 W. 97th Pl., Leawood, Kans. 66208

Filed Sept. 17, 1973, Ser. No. 397,681
Int. Cl. F04f *1/02*
U.S. Cl. 417—149 **9 Claims**



1. In a pressure-differential pumping system for dry bulk products, a control valve assembly including:
- means defining a valve chamber;
- inlet means for introducing pressurized air into said chamber;
- outlet means for withdrawing air from said chamber;
- port means between said inlet and outlet means in communication with said chamber;
- venturi structure communicating with said outlet means;
- means for forcing a primary stream of air through said chamber to create a secondary airstream flowing from said port through said outlet means and merging with said primary stream; and
- a valve member reciprocable within said chamber for alternately causing suction intake and positive discharge through said port means,

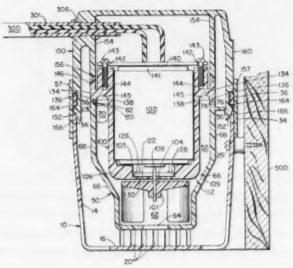
said member being reciprocable between a first position closing said inlet means to cause said suction intake as a result of the induced secondary airstream through said outlet means, and a second position opening said inlet means to cause said positive discharge as a result of airflow from said inlet means through said port means.

3,861,831

VERTICAL SHAFT IMPELLER PUMP APPARATUS

Clinton Rule, Beverly Farms, Mass., assignor to Rule Industries, Inc., Gloucester, Mass.

Filed Dec. 3, 1973, Ser. No. 420,933
Int. Cl. F04b *17/00*
U.S. Cl. 417—424 **10 Claims**



1. A vertical shaft impeller pump apparatus comprising:

A. an external enclosure comprising intake means adapted to conduct fluid thereinto;

B. a generally cup-shaped housing disposed within and spaced apart from said external enclosure and comprising

i. inlet means adapted to conduct fluid from within said external enclosure into said housing, said inlet means being located at the lower portion of said housing, and

ii. discharge means adapted to conduct fluid from said housing to the exterior of the pump, said discharge means being located at the upper portion of said housing;

C. a fluid-tight casing disposed within and in spaced relationship with said housing, said spaced relationship defining

i. an impeller chamber within said housing and below said casing, and

ii. an open annular flow passage, extending from said impeller chamber to said discharge means, between the sidewalls of said housing and said casing;

D. a prime mover disposed within said casing, said prime mover comprising a drive shaft extending in substantially fluid-tight relationship through the bottom of said casing; and

E. an impeller in driving relationship with said drive shaft and disposed within said impeller chamber.

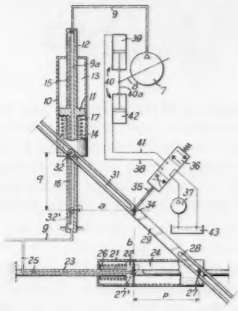
3,861,832

PUMP POWER GOVERNOR

Claude M. Pinson, Senlis, France, assignor to Societe Anonyme Poclain, Oise, France

Filed Aug. 2, 1973, Ser. No. 384,789
Claims priority, application France, Aug. 4, 1972, 72.28292; Apr. 19, 1973, 73.14433
Int. Cl. F04b *49/00*
U.S. Cl. 417—212 **10 Claims**

1. A device for governing the power of a pump having exhaust and delivery pipes, said device including control means for varying the pump's cylinder capacity, said device comprising a first rectilinear guide, a first control member movably mounted on said guide, means operatively connecting said control member to said pump for displacing said control member with respect to said guide distances proportional to the value of the rate of flow of the fluid delivered by the pump; a second rectilinear guide, a second control member movably mounted on said second guide, means operatively connecting said second control member to said pump for displacing said second control member with respect to said second rectilinear guide distances which vary in direct ratio with the value of the pump delivery pressure; a connecting rod of variable length operatively connecting said first and second control members; said connecting rod being located to pass, when the device is in equilibrium, through a predetermined point defined by the intersection between two straight lines respectively drawn perpendicular to each of said guides from the relative position from each of the first and second control members, representative of zero rate of flow and pressure; a regulator valve having a slide including a free end operatively



connected to said link at a position located at said predetermined point when the device is in equilibrium, and an auxiliary pump; said regulator valve including means for placing said auxiliary pump in communication with:

a. a first chamber of a double acting piston cylinder unit having a piston rod operatively connected to the control means for varying pump cylinder capacity when the connecting rod is displaced with respect to said predetermined point due to an increase in power of the pump;

b. a second chamber of said piston-cylinder unit, having a piston rod operatively connected to the control means for varying pump displacement capacity when the connecting rod is displaced with respect to said predetermined point due to a drop in power of the pump; and

c. a fluid reservoir when the displacement of the connecting rod is zero with respect to the predetermined point, indicating that constant power is being maintained by the pump.

3,861,833

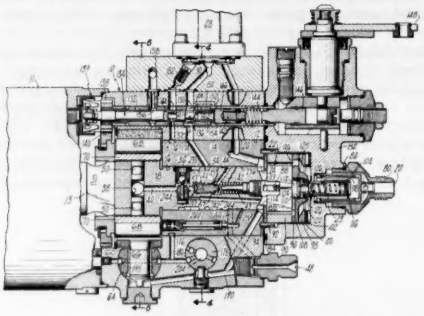
FUEL INJECTION PUMP

Daniel Salzgeber, Windsor; Robert Raufeisen, and Charles W. Davis, both of Simbury, all of Conn., assignors to Stanadyne, Inc., Windsor, Conn.

Filed Feb. 28, 1973, Ser. No. 336,538
Int. Cl. F04b *3/00*
U.S. Cl. 417—254 **10 Claims**

1. A liquid fuel injection pump suited for the delivery of measured charges of liquid fuel under high pressure to an associated engine comprising a pump chamber wherein the charges are pressurized to high pressure, means for metering the fuel delivered to the pump chamber to provide measured charges of fuel in amounts correlated with engine operating conditions, a pair of through bores in the housing of said pump respectively mounting a pair of shuttles, first chambers respectively disposed at one end of each of said pair of shuttles alternatively receiving the measured charges of fuel prior to

their delivery to the pump chamber, a second chambers respectively disposed at the other end of each of said shuttles, a source of hydraulic pressure connected to said second chambers to actuate said shuttles alternatively to deliver the previously metered charges of fuel to the pump chamber, means for isolating said shuttle mechanism from said pump chamber



during the pressurizing of the charges in said pump chamber and an axially adjustable stop at each end of each through bore limiting the movement of each shuttle in each direction, the stops for each shuttle being accessible through the ends of its through bore and independent of each other for charging the limit of the movement of each shuttle in each direction.

3,861,834

SUBMERSIBLE PUMP WITH GUIDE MEANS

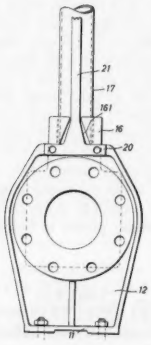
Albert Blum, Scheiderhoehe, Lohmar, Germany

Filed Nov. 30, 1971, Ser. No. 203,304

Claims priority, application Germany, Nov. 30, 1970, 2058736

Int. Cl. F04b *39/00*

U.S. Cl. 417—360 **6 Claims**



1. A submersible electric motor-pump assembly having a drive motor and a pump connected therewith, which is lowerable into a body of fluid with the outlet of said pump being guided into engagement with a discharge pipe, comprising: a guide element adapted to be cooperatively associated with the discharge pipe, a guide sleeve having a downwardly tapered aligning gap secured to said motor-pump assembly, an alignment rail adapted to be cooperatively associated with and extend from said discharge pipe, and said guide sleeve being in sliding engagement with said guide element and said aligning gap of said guide sleeve being engageable with said alignment rail to ensure positioning of said motor-pump assembly in alignment with said discharge pipe as said assembly is lowered in position.

3,861,835

LIQUID FUEL PUMPING APPARATUS

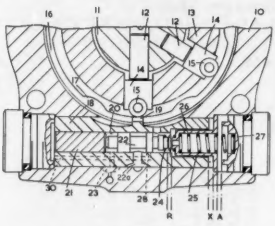
Istvan Bakti, Northolt, England, assignor to C. A. V. Limited, Birmingham, England

Filed May 1, 1973, Ser. No. 356,131

Claims priority, application Great Britain, May 5, 1972, 21014/72

Int. Cl. F04b *19/02*

U.S. Cl. 417—462 **8 Claims**



1. A liquid fuel pumping apparatus comprising in combination, an injection pump including a plunger operable by an adjustable cam, the injection pump being driven in timed relationship with the engine to which fuel is supplied, a fluid pressure operable piston for controlling the timing of injection of fuel by the injection pump, means connecting said piston and said cam whereby movement of the piston will effect adjustment of the cam, means for supplying fluid at a pressure which varies in accordance with the speed at which the pump is driven, a servo valve operable to control the application of liquid under pressure to one end of said piston, said servo valve being located within a bore defined in said piston, first and second resilient means of differing strengths acting upon said servo valve to urge the servo valve towards a closed end of the bore, said servo valve contacting the closed end of the bore to urge the piston towards a position in which the timing of injection is fully retarded, passage means through which fluid under pressure can flow to act on said servo valve in opposition to the force exerted by the resilient means and stop means operable firstly as the pressure of fluid increases, to limit the deflection of said first and weaker resilient means and secondly as the pressure of fluid further increases, to limit the deflection of said second and stronger resilient means.

3,861,836

ROTARY AIR COMPRESSOR INCLUDING A SINUOUS TUBULAR MEMBER PRESENTING A SERIES OF COMPRESSION CHAMBERS AND PISTONS MOVABLE THROUGH SAID CHAMBERS

Paul J. Hansen, 334 Interstate Pky., Bradford, Pa. 16701

Filed July 20, 1973, Ser. No. 381,029

Int. Cl. F01c *1/00;* **F04c** *17/00;* **F01c** *21/04*

U.S. Cl. 418—81 **11 Claims**

1. In a rotary air compressor,

a. a housing comprising a cylindrical wall and a pair of end walls secured to the opposite ends of said cylindrical wall;

b. a sinuous tubular member connected to said cylindrical wall and located therewithin in a circular arrangement;

c. a shaft journalled in said end walls and coaxial with said cylindrical wall;

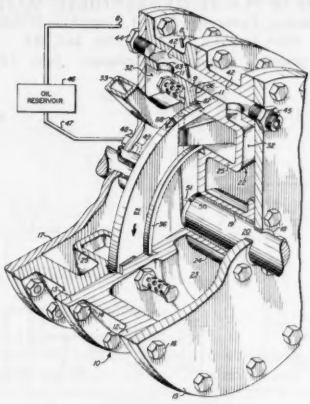
d. a disc drivably mounted on said shaft midwawy said end walls and dividing said tubular member into a plurality of compression chambers, some on one side of the disc and some on the other side;

e. an air inlet at one end of each of said compression chambers and an air outlet at the other end of each of said compression chambers;

f. said disc being formed with a plurality of angularly spaced openings in the portion thereof which divides said tubular

member into said compression chambers, each of said openings having a leading edge and a trailing edge;

g. a piston pivotally mounted at one end on said disc at the leading edge of each of said openings and swingable through that opening from a compression chamber on one side of the disc to one on the other side, said pistons



having heads corresponding to the cross-section of said tubular member in which they are slidably received with a snug fit, and

h. a compression manifold defined by said housing on each side of said disc and communicating with the air outlets of the compression chambers on the adjacent side of said disc.

3,861,837

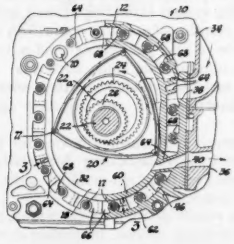
LIQUID COOLED ROTOR HOUSING

Gregory Flynn, Jr., St. Clair Shores, and Paul J. Louzecky, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 10, 1973, Ser. No. 404,859

Int. Cl. F01c *21/06;* **F04c** *29/04;* **F02b** *55/10*

U.S. Cl. 418—83 **5 Claims**



1. A rotor housing for a rotary piston internal combustion engine, said rotor housing including an annular inner shell having an inner surface with a multilobe profile, an outer shell encircling said inner shell and spaced from said inner shell, a plurality of circumferentially spaced-apart cross ribs extending across the full width of said inner shell and said outer shell connecting said inner shell to said outer shell and forming therewith fluid coolant passages for the flow of fluid across the full width of said rotor housing, and circumferential extending, axial spaced-apart hoop struts extending from opposite sides of said cross ribs to further connect said inner shell to said outer shell, an adjacent set of said hoop struts peripherally overlapping each other around the outer periphery of said inner shell intermediate the ends thereof.

3,861,838

ROTARY PISTON INTERNAL COMBUSTION ENGINE, ESPECIALLY OF TROCHOIDAL CONSTRUCTION

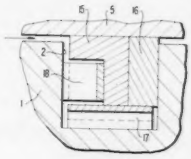
Heinz Lamm, Esslingen-Saint Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed July 7, 1972, Ser. No. 269,734

Claims priority, application Germany, July 9, 1971, 2134227

Int. Cl. F01c *19/00*

U.S. Cl. 418—142 **12 Claims**



1. A rotary piston internal combustion engine with a housing including a casing and lateral parts comprising: a piston disposed within said housing, a peripheral groove provided along each end face of said piston, said peripheral groove being provided with two spaced wall portions and a bottom wall portion, one of said wall portions being disposed on the gas side of said piston, at least two axially movable sealing bar means disposed in each of said grooves, a first spring means disposed in a respective peripheral groove between said bottom wall portion and said at least two sealing bar means for axially urging said at least two sealing bar means against the lateral parts, a second spring means disposed between said sealing bar means and said wall portion on the gas side of said piston for radially urging said sealing bar means against the other wall portion of a respective peripheral groove.

3,861,839

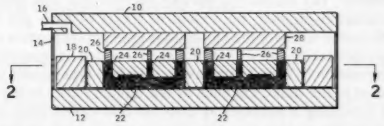
DIFFUSION MOLDING APPARATUS

Raj K. Malik, Lemon Grove, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Nov. 8, 1973, Ser. No. 414,044

Int. Cl. B29c *3/00;* **B30b** *11/00*

U.S. Cl. 425—78 **5 Claims**



1. A diffusion molding assembly comprising:

a bottom plate:

a substantially toroidal yoke on said bottom plate;

a plurality of mold bars assembled within said yoke, said mold bar assembly being in contact with the inner surface of said yoke and defining at least one mold cavity within said yoke;

pressure members extending across the upper open end of each mold cavity;

a top plate in contact with said pressure member; and

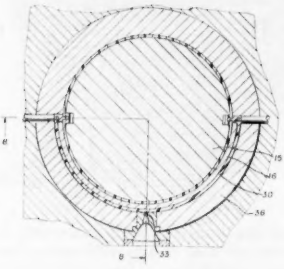
at least some of said mold bars and pressure members comprising a material having a higher coefficient of thermal expansion than does the yoke material whereby mold part clearances are reduced as the assembly is heated.

3,861,840

APPARATUS FOR MOLDING A PLASTIC CONTAINER HAVING A MOLDED HANDLE PIVOTALLY RETAINED BY AN INTEGRALLY FORMED ATTACHMENT

Raymond A. Heisler, 657 Dakota Tr., Franklin Lakes, N.J. 07417

Filed Feb. 20, 1973, Ser. No. 333,500
Int. Cl. B29f 1/00
U.S. Cl. 425—130 15 Claims



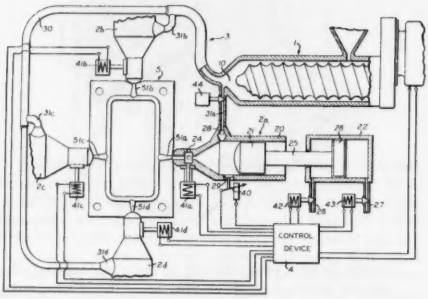
1. Apparatus for molding a container and bail-type handle whose ends are molded around mating portions formed on the exterior surface of said container to provide a rotatably secured attachedment of the handle to the container, said apparatus including: (a) a mold having complementary male and female components which when closed provide a cavity for the molding therein of a container; (b) a pair of locally positioned and shaped recesses positioned and shaped so that as the container is molded there is provided a pair of diametrically opposed portions integrally attached to the outer portion of the container; (c) a pair of movable pins carried in the female mold portion with each pin adapted for movement in a guideway for said pin provided in the mold and in this guideway moving the inner end of the pin toward, into and from one of said shaped recesses, each of said pins having its inner end formed to provide a fixed member of a molded-in-place rotatable connect and with said fixed member an integral portion of the container; (d) means for moving each of the pins to a fixed position so that the inner end of the pin is positioned within the locally positioned recess and as and when the container is molded of plastic this plastic material flows into the shaped recess and around the end of the pin to form a bail handle securing portion which is integrally attached to the container; (e) means for moving each of the pins after the container is molded, the extent of travel of each pin being sufficient to uncover the bail-handle connection portion of the container cavity and with its outward travel to an intermediate stop position to form a hub cavity; (f) a bail-type handle cavity formed in the mold, the ends of this handle cavity being open and providing a passageway into the hub cavity area evacuated by the moved pin, this movement of each of the pins uncovering said passageway from the handle portion to and into the hub cavity and recess, each moved pin at its stopped intermediate position with its inner end providing an outer wall closing of the handle hub cavity; (g) means for injecting from a separate source of plastic and through its own sprue a quantity of molten plastic into the handle cavity to form the handle and connected hub ends, said plastic as it flows to and around the bail-handle connecting portion carried by the block-like member on the plastic container forming a pivoted connection as and while said molded container is retained in the mold; (h) means for moving the pins outwardly to a further condition to release the inner end of the pins from engagement with the just formed handle and hub attachment while the container and attached handle is still in the mold, and (i) means for opening the mold and for removing from said mold the container and rotatably secured and retained handle.

3,861,841

MACHINE FOR THE INJECTION MOLDING OF A MIXTURE OF PLASTICIZED SYNTHETIC MATERIAL

Robert Hanning, Cavernago Parc 1, Campione D'Italia, Italy

Filed June 13, 1972, Ser. No. 262,282
Claims priority, application Germany, June 14, 1971, 2129348
Int. Cl. B29f 1/00
U.S. Cl. 425—146 4 Claims

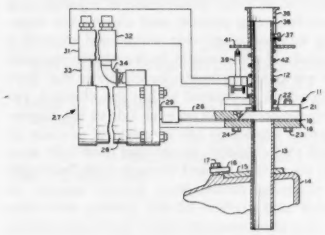


1. An injection-molding machine comprising:
a plasticizing- and-mixing device having an output side;
a mold provided with a plurality of injection openings distributed about said mold on different sides thereof;
a plurality of complete individually adjustable and controllable injection-molding units each including an injection-molding cylinder equipped with at least one injection-molding nozzle communicating with one of said injection openings and distributed around said mold;
a respective injection-molding piston reciprocating in each of said injection-molding cylinders and adapted to be subjected to pressure alternately on both sides thereof;
a ring-feeding system extending around said mold and including a plurality of conduits operatively connecting said output side of said plasticizing- and-mixing device with said injection-molding units such that said individual injection-molding cylinders and their nozzles are in operative connection with said injection openings of said mold;
a single control- and-adjusting device for the control and adjustment of said plasticizing- and-mixing device and of said respective injection-molding units responsive to pressure, temperature and time;
piston drive means operatively connected to each of said injection-molding pistons, the piston drive means being hydraulically controlled by said control- and-adjusting device;
first valve means for each of said piston drive means actuated by said control- and-adjusting device for individually switching off a corresponding one of said injection-molding units;
second valve means for closing each of said conduits to the respective injection-molding units;
third valve means for closing said injection-molding nozzles of each of said plurality of injection-molding units; and
pressure measuring means operatively connected to said injection-molding units and to said control- and-adjusting device for controlling all of said valve means in dependence upon pressure, time and path.

3,861,842
EMERGENCY CUTTER TO SEVER CONTINUOUS FIBROUS MATERIAL

William E. Thomas, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 24, 1973, Ser. No. 363,486
Int. Cl. B29f 3/10
U.S. Cl. 425—151 5 Claims

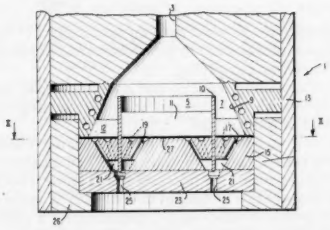


1. Feed means comprising:
a hollow feed inlet for a continuous fibrous material;
a cutting means downstream of the entrance of said feed inlet and movable to traverse the open area of said feed inlet; and
actuating means comprising a member extending upstream from said entrance and through which said fibrous material moves in entering said feed inlet, said member being supported adjacent the entrance of said feed inlet and being movable in the direction of movement of said fibrous material into said feed inlet and when so moved to actuate said cutting means to traverse said open area and sever said continuous fibrous material.

3,861,843
APPARATUS FOR FORMING LAMINAR CRIMPABLE FILAMENTS

Herbert W. Keuchel, Tallmadge, Ohio, and Walter J. Polestak, Summit, N.J., assignors to Celanese Corporation of America, New York, N.Y.

Division of Ser. No. 525,680, Feb. 7, 1966, Pat. No. 3,780,149.
This application July 17, 1973, Ser. No. 357,733
Int. Cl. D01d 3/00
U.S. Cl. 425—198 1 Claim

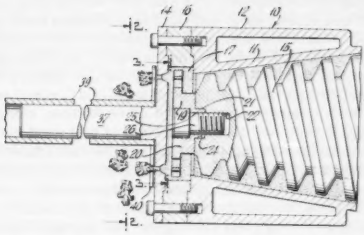


1. An apparatus for forming a crimpable filament from a single polymer composition comprising,
means for receiving a flow of said polymer composition in a molten state,
at least two chamber means for receiving separate portions of said flow, each of said chamber means containing a porous element having differing shear resistances, means for subjecting said separate portions to a predetermined different thermal environment in said chamber means,
means for combining said portions of said flow upon exit from said chambers and means for jointly extruding said combined portions to form laminar crimpable filaments from said combined polymer portions.

3,861,844
APPARATUS FOR PRODUCING IRREGULARLY SHAPED EXPANDED FOOD PRODUCTS

Robert C. Miller, Ringwood, N.J., assignor to Nabisco, Inc., New York, N.Y.

Filed May 7, 1973, Ser. No. 357,799
Int. Cl. A23l 1/18; A21c 11/20
U.S. Cl. 425—207 3 Claims

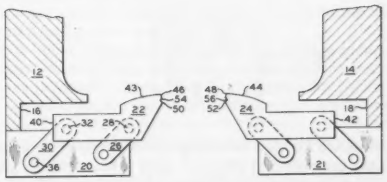


1. In a food product extruder having an enclosed zone, a rotating screw for moving dough under high pressure in a stream through the zone, and a die plate forming one wall of the zone and having extrusion die orifices through which the dough is extruded to release the pressure thereon; the improvements comprising a flow interrupting plate secured to said screw to rotate therewith and extending across the stream of dough closely adjacent to said die plate, said interrupting plate being circular with randomly spaced cutouts in its outer periphery of different sizes and having a plurality of randomly spaced different sized aperatures therein, whereby the flow pattern of the dough stream moving toward the die plate is disrupted to produce dough streams flowing through the die orifices which are each composed of a plurality of flow segments which do not fully coalese into a unified stream so that these segments expand semi independently upon extrusion to form a highly irregularly shaped product.

3,861,845
FOUR BAR LINKAGE FOR INSERTS FOR BLOW MOLDING MOLDS

Alvin E. Butcher, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 21, 1972, Ser. No. 308,574
Int. Cl. B29d 23/03
U.S. Cl. 425—302 B 8 Claims



1. A blow molding mold comprising in combination:
a first mold half;
an opposed second mold half adapted to come together with said first mold half along a parting line to form said mold;
a guide tip adapted to enter an open end of a tubular

parison to keep the parison walls apart and aid in forming a neck of an article to be formed from said parison said guide tip being disposed between neck-forming portions of said mold halves, said guide tip further being adapted to hold said article being molded until after said mold halves are opened;

a first insert having a bottom wall forming surface which bottom wall forming surface of said first insert is adapted to cooperate with a bottom wall forming portion of said first mold half, said first insert being pivotally attached at a leading end thereof to a first end of a first bar and being pivotally attached at trailing end thereof to a first end of a second bar;

a second insert having a bottom wall forming surface which bottom wall forming surface of said second insert is adapted to cooperate with a bottom wall forming portion of said second mold half, said second insert being pivotally attached at a leading end thereof to a first end of a third bar and being pivotally attached at a trailing end thereof to a first end of a fourth bar, in closed position said bottom wall forming portions of said first and second inserts cooperating with each other to form, along with said bottom wall forming surfaces of said mold halves, a means for forming a bottom wall of said article being molded, said inserts being contoured so as to impart a substantial recess to the article being molded;

said inserts thus being adapted to move both axially along a plane through said parting line and laterally transverse to said parting line as said mold halves open so as to reduce scuffing of a bottom of said article.

3,861,846

MOULDS FOR MANUFACTURING THROUGH EXTRUSION-BLOWING OF SEALED CONTAINERS MADE FROM PLASTICS MATERIAL

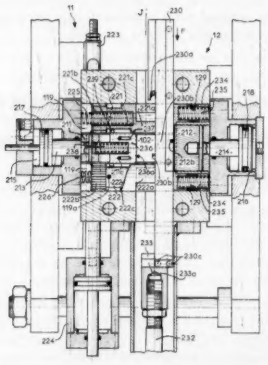
Jean-Luc Berry, Mesnil sur L'Estree, France, assignor to E. P. Remy et Cie, Dreux, France

Filed Sept. 20, 1973, Ser. No. 399,355

Claims priority, application France, Sept. 21, 9172, 72.3352; Aug. 10, 1973, 73.29427

Int. Cl. B29c *17/14*

U.S. Cl. 425—305 B **17 Claims**



1. A mould for blow-moulding sealed containers kept under an inner pressure and obtained from a heat-sealable plastic material extruded as a continuous tubular parison closed at its bottom portion, comprising a pair of separable shells that are juxtaposabie along a joint face and exhibiting a pair of complementary depressions with a shape corresponding to that of the container to be made and a pair of also complementary notches or grooves forming together a channel opening at the top portion of the mould when the latter is closed and communicating with said depressions, said shells being adapted when they are separated to accommodate the extruded parison therebetween and when they are juxtaposed to enclose or confine said parison in part between the depressions and in part within said channel, said shells being provided with means for generating about at least the major portion of the parison an outer pressure which when inflating the container will be lower than said inner pressure urging said parison against said depressions of the mould and giving it the shape of the container and closing and separating means provided in the channel area to tightly close the container at its upper portion and the following parison at its lower portion and to separate said container from said following parison, said closing and separating means being adapted to provide within said channel a fluid-tight area sealed off with respect to the plastic material and comprising in combination means for clamping that portion of the parison which is located within the channel, retractable obturating means located on each side of the clamping means and adapted when they are in operative position to define together with said clamping means said fluid-tight area and cutting means adapted to extend through said fluid-tight area after said clamping means have locally nipped or clamped and sealed said portion of the parison and after retraction of said obturating means to cut or sever said portion at the location thus sealed.

3,861,847

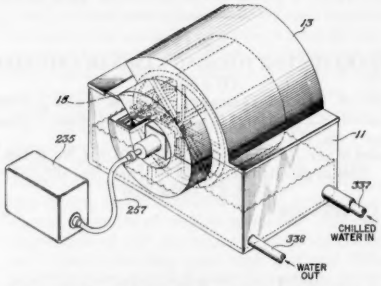
AUTOMATED BENDING AND BELLING OF PLASTIC PIPE

Louis H. Barnett, 3631 Encanto Dr., Forth Worth, Tex. 76109

Continuation-in-part of Ser. Nos. 349,293, April 19, 1973, , and Ser. No. , , , Continuation-in-part of Ser. No. 358,160, May 7, 1973, which is a division of Ser. No. 127,931, March 25, 1971, Pat. No. 3,753,635. This application Feb. 19, 1974, Ser. No. 443,920

Int. Cl. B29c *17/02*

U.S. Cl. 425—324 **19 Claims**



1. Apparatus for at least semi-automatically (1) bending pre-cut segments of conduit to form elbows and (2) belling the ends of the elbows comprising:

a. expansible belling mandrel and insert means for inserting said belling mandrel into said conduit to sealingly engage said end of said conduit;

b. retaining means for retaining said belling mandrel in sealing engagement with said end of said conduit;

c. pressurizing means for injecting a fluid under a controlled superatmospheric pressure to establish a superatmospheric pressure within said conduit to form a differential pressure across its walls;

d. heating means for heating said segment of conduit to its softening temperature;

e. expanding means for expanding said mandrel and said end at its softening temperature to form a belled end that is adapted for sealingly receiving a co-engaging end of said conduit inserted therewithin;

f. jig means and bending means for bending said conduit at its softening temperature while maintaining said pressure differential across its walls; said bending means being adapted to at least semi-automatically bend the said con-

duit to said predetermined degree and radius of bend in conformance with said jig means to form a precision elbow with a minimum of distortion of its side walls because of the differential pressure thereacross;

g. cooling means for cooling said precision elbow while maintaining said differential pressure and said conformance to said jig means; and

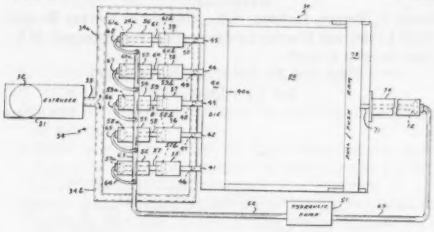
h. an equalizing and releasing means for equalizing the pressure across the walls of the conduit, for releasing and removing said belling mandrel and for releasing said elbow from comforming engagement with said jig means.

3,861,848

EXTRUSION APPARATUS FOR PRODUCING LARGE SCALE PRODUCTS

Joseph L. Weingarten, 1427 Oak Tree Dr., Kettering, Ohio 45440

Filed Mar. 26, 1973, Ser. No. 344,789
Int. Cl. B29f *3/02, 3/06, 3/08*
U.S. Cl. 425—378 **3 Claims**



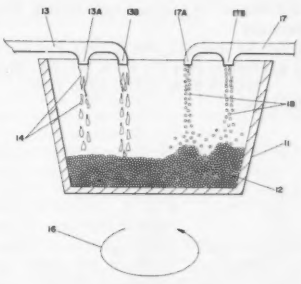
1. Apparatus for extruding large cross-section articles, comprising; heated extruder means for melting and initially pumping extrudant at a predetermined temperature compatible with the plastic flow thereof, and at a relatively low pressure; an extrusion die member enlarged to an extremely large scale and greatly expanded width-extrusion producing capability, and incorporating a rear heated die section having a relatively elongated, main, common, extrudant-collecting chamber in open communication with a plurality of extrudent-admitting, entrance passages open at, and evenly distributed over the rear end of said die member; a first series of relatively short extrusion passages in communication with, and extending forwardly of said collecting chamber and utilizable to transfer the extrudant forwardly in a molten state, and a second series of relatively elongated, extrusion passages communicating with the forward ends of said first-named series of passages for gradually cooling and thereby hardening the extrudant into the finished product, as it is transferred thereby further forwardly to and out of the forward or front side of said die member; a separate, heated, temporary extrudant-storage means disposed in spaced relation from the rear of the die member and in direct alignment with the open rear end of an extrudant-admitting, entrance passage corresponding thereto; an extrudant-exhaust outlet pipe extending from said extruder means; a main, common, extrudant-feed line in open communication with and receiving extrudant being pumped at relatively low pressure from said extruder means; a first series of extrudant transferring-branch lines respectively disposed between one end of each of said temporary extrudant-storage means, in communication with the interior thereof, and an extrudant-admitting, entrance passage of said rear die section corresponding thereto; a second series of extrudant transferring-branch lines respectively interconnected between said main, common extrudant-feed line and a selected one of said first series of branch lines corresponding thereto; said extruder means initially pumping molten extrudant at relatively low pressure through and completely filling said main, common, extrudant-feed line, and each of said first and second series of extrudant transferring-branch lines, the first series of entrance passages incorporated in said rear die section, the main, common, extrudant-collecting chamber thereof and the second series of extrusion cooling and hardening-passages; back pressure-producing means adjustably positioned to a first, rearwardmost location in blocking position against, and preventing further movement to the front of the gradually hardening extrudant being initially pumped at relatively low pressure by said extruder means into said second series of extrudant transferring-branch lines; and separate power-actuated means interconnected with and utilizable for each of said separate, temporary extrudant-storage means for thereby pressurizing and pumping the extrudant contained therewithin into the main, common collecting chamber at the rear of the die member, through the said first and second series of branch lines and entrance passages, and thereafter into the said second series of extrusion-cooling and hardening passageways, at a relatively high pressure sufficient to counteract the blocking effect of said back pressure-producing means for its subsequent extrusion into a relatively large scale item at the front of said die member.

3,861,849

APPARATUS FOR PRODUCING OXIDE REFRACTORY MATERIAL HAVING FINE CRYSTAL STRUCTURE

Wesley Q. Richmond, Stevensville, Ontario, Canada, and Paul Cichy, Buffalo, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 153,318, June 15, 1971,. This application Sept. 18, 1972, Ser. No. 290,206
Int. Cl. B28b *1/54*
U.S. Cl. 425—447 **3 Claims**



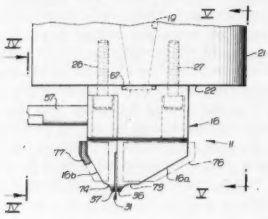
1. Apparatus for rapidly cooling and solidifying an oxide refractory melt, comprising:

1. a solidification chamber having a closed bottom and a depth of greater than 15 cm;
2. an initial supply of non-reactive, non-melting particulate solid cooling media comprising carbon steel spheres ranging in diameter from about 5 to about 60 mm, which fills the solidification chamber to a depth of at least about 15 cm, the solid cooling media being of a material other than that of the oxide refractory melt to be rapidly cooled and solidified;
3. means for casting the oxide refractory melt into the solidification chamber, over the cooling media; and
4. means for adding additional solid cooling media comprising carbon steel spheres ranging in diameter from about 5 to about 60 mm over the cast oxide refractory, and means for casting additional oxide refractory melt over the additional solid cooling media in the solidification chamber.

3,861,850
FILM FORMING HEAD

Marvin E. Wallis, 5535 Longfellow Rd., Santa Barbara, Calif. 93111

Filed Sept. 5, 1972, Ser. No. 286,116
Int. Cl. B29d 7/02; B29f 3/04
U.S. Cl. 425—461 16 Claims

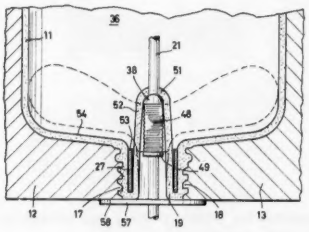


1. In a film forming head for receiving a viscous resin material under substantial pressure and forming a thin extruded sheet thereof via an extruding orifice, in which head portions define an internal cavity and a discharge orifice, the improvement wherein a head portion has a convex curved peripheral portion and a straight peripheral portion tangent to each end of said curved portion, and an elongated orifice extending along and through said curved and straight peripheral portions communicating with said internal cavity.

3,861,851
APPARATUS FOR MOULDING THE NECK OF AN EXTRUDED HOLLOW BODY

Wolfram Schiemann, 17 Eugen-Nagele-Strasse, 714 Ludwigsburg, Germany

Division of Ser. No. 206,042, Dec. 8, 1971, Pat. No. 3,792,140.
This application July 17, 1973, Ser. No. 380,004
Int. Cl. B29c 17/07; B29d 3/02
U.S. Cl. 425—503 7 Claims



1. Apparatus for moulding the wall of the neck section of an extrudate hollow body, comprising

an extruder for producing a tube of thermoplastic material,

mould sections arranged below the extruder which can be moved up to and away from one another and compress the tube in the vicinity of the neck when the mould is closed, said mould sections having an opening corresponding to the neck,

a rod-shaped mandrel which passes through the opening for blow moulding,

first and second expandable means on said mandrel,

said first expandable means being adapted to bear against an inner face at the neck,

said second expandable means comprising externally expandable and contractable means through which the mandrel passes secured spaced from the first expandable means, the outer circumference of said second expandable means, when contracted, being substantially smaller than the internal diameter of the finished neck,

means for inserting said mandrel into said tube to a first position at which said first expandable means is about on a level with said neck and to a second position at which said second expandable means is about the level of said neck,

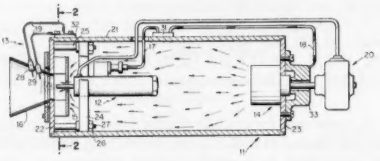
a pressure device which presses the lower end of the tube in front of said second expandable means against the mandrel when the mandrel is inserted and the hollow body already blow-moulded,

means for expanding said second expandable means at about the level of the neck until the outer cover of said second expandable means bears against an inner wall of the hollow body.

3,861,852
FUEL BURNER WITH IMPROVED ULTRASONIC ATOMIZER

Harvey L. Berger, Latham, N.Y., assignor to Harvey Berger; Carl Levine and Murray Levine, both of Poughkeepsie, N.Y., part interest to each

Filed Jan. 25, 1974, Ser. No. 436,637
Int. Cl. F23c 11/00
U.S. Cl. 431—1 13 Claims



1. In an ultrasonic atomizer that includes a transducer sandwiched between a pair of resonator sections, an atomizing surface at the tip of one of said sections and fuel delivery means to said atomizing surface, the improvement which comprises;

clamping means for holding said resonator sections in compression against said transducer for good acoustical coupling and uniform compression;

said clamping means including a cylindrical casing enclosing said resonator sections and said transducer and engaging said resonator sections at approximate nodal planes; and,

sealing means positioned between said casing and said one of said resonator sections for preventing fuel contamination of said transducer.

3,861,853
METHOD OF REDUCING CARBON MONOXIDE FORMATION IN CATALYTIC HEATERS AND BURNERS AND IMPROVED CATALYTIC STRUCTURE FOR USE THEREWITH

Henry G. Petrow, Cambridge, Mass., assignor to Prototech Company, Newton, Mass.

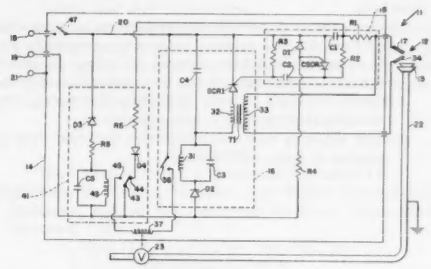
Filed Dec. 29, 1972, Ser. No. 319,170
Int. Cl. F23b 7/00
U.S. Cl. 431—7 10 Claims

1. A method of reducing carbon monoxide formation in the catalytic combustion of a hydrocarbon gaseous fuel, that comprises, diffusing a hydrocarbon gaseous fuel into a mat, disposing a catalytic surface exposed to air on an outer surface of the mat, and applying to said surface salts selected from the group consisting of carbonates, acetates, borates, sulphates, nitrates and chlorides of alkali earth metals selected from the group consisting of Cs, Rb, K and Na.

3,861,854
FLAME MONITORING SYSTEM

Lyman H. Walbridge, Ashland, Mass., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Jan. 26, 1972, Ser. No. 220,788
Int. Cl. F23n 5/10
U.S. Cl. 431—80 19 Claims

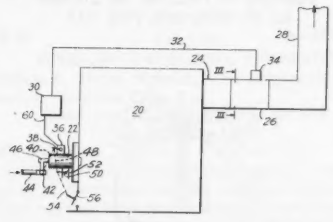


1. Circuit apparatus for monitoring flame generated by a fuel burner and comprising:
- first and second input terminals for connection to a source of a.c. power;
- a flame sensing electrode for disposition adjacent a fuel burner in the region occupied by flame emanating therefrom;
- direct current sensing means connected between said first terminal and said flame sensing electrode; said direct current sensing means being electrical current isolated from said second input terminal and adapted to produce a flame signal in response to current flow supported by a flame emanating from the burner;
- ground circuit means electrically isolated from said first and second terminals, said ground circuit means adapted for connecting a ground wire of a three-wire supply with a second electrode means spaced from said first electrode in said region occupied by flame; and
- control means connected between said first and second terminals so as to be powered by the source of a.c. power connected thereto, and coupled to said sensing means so as to be responsive to said flame signal.

3,861,855
AUTOMATIC COMBUSTION CONTROL

Seymour Seider, Hewlett Harbor, N.Y., assignor to B.S.C. Industries Corp., Hewlett Harbor, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,323
Int. Cl. F23n 5/08
U.S. Cl. 431—76 33 Claims

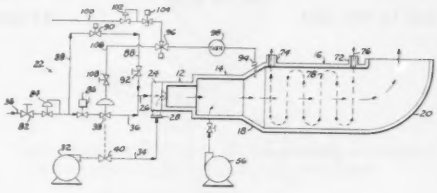


1. Combustion control apparatus comprising a fuel input means, control means for regulating said fuel input means, smoke density detecting means for detecting and measuring the density of smoke generated by combustion of said fuel and for adjusting said control means in accordance with said density, and smoke accumulating means for amplifying the density of said smoke to facilitate the detecting and measuring of the same by said detecting means.

3,861,856
CONVECTION HEATER FOR FLUIDS

Charles E. Smalling, 7994 Locke Lee, Houston, Tex.

Filed Aug. 6, 1973, Ser. No. 386,267
Int. Cl. F23n 5/10
U.S. Cl. 431—80 1 Claim



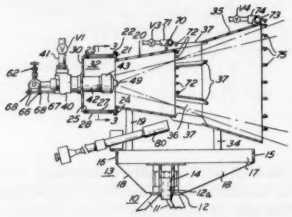
1. A convection heater for fluids, comprising:
- an elongated horizontally disposed housing having an inlet end portion and an outlet end portion forming a heated gases passageway therebetween,
  - the inlet end portion of said housing forming a primary combustion chamber and a secondary combustion chamber,
  - the outlet end portion of said housing forming a convection chamber communicating with the secondary combustion chamber;
  - said housing having a lateral opening in its area forming the secondary combustion chamber;
- fuel mixture supply means including supply pipe means coaxially connecting a source of fuel to the inlet end of the primary combustion chamber,
  - a primary blower having an outlet,
  - tubing connected at one end with the outlet of said primary blower and connected at its other end with the fuel mixture supply means in tangential relation with respect to the axial direction of flow of fuel entering the primary combustion chamber, and,
  - a pressure operated volume flow control valve interposed in said supply pipe and said tubing, respectively,
  - said control valves being interconnected for opening and closing in unision;
- means igniting said fuel mixture;
- means supplying a forced draft of oxygen to the burning fuel mixture within the secondary combustion chamber including a secondary blower having an outlet opening coaxially connected with the lateral openings of said housing; and,
- control means responsive to the temperature of heated gases adjacent the downstream end of the secondary combustion chamber for regulating the quantity of fuel mixture entering the combustion chambers and the temperature of heated gases flowing through the convection chamber,
  - said control means including,
  - piping operatively connecting a source of fluid under greater than atmospheric pressure with at least one of said volume flow valves for opening and closing the latter,
  - a solenoid valve interposed in said piping,
  - a thermocouple connected with said housing between the secondary combustion chamber and the convection chamber, and,
  - means including a temperature responsive thermostatic control interposed between and connected with said thermocouple and said solenoid valve for opening and closing said solenoid valve and applying fluid pressure to said one volume flow valve for opening and closing

said one volume flow valve in response to decrease and increase, respectively, beyond a predetermined range of the temperature of burning gases leaving the secondary combustion chamber.

3,861,857
FLAMMABLE LIQUID WASTE BURNER

John F. Straitz, c/o Combustion Unlimited, Incorporated, P.O. Box 8856, Jenkintown, Pa. 19117

Filed Jan. 14, 1974, Ser. No. 433,255
Int. Cl. F23d
U.S. Cl. 431—202 **8 Claims**



1. Apparatus for burning flammable liquid waste comprising a support, said support comprising a pivotally mounted frame for facing said housing and said cones in a selected substantially horizontal direction,

a housing,

said housing having means for controlling the delivery of air thereinto,

a burner assembly carried by said housing,

said burner assembly comprising

members for supplying flammable liquid waste forwardly with respect to said housing and

members for supplying supplemental fuel in close relation to the waste delivered from said first mentioned burner assembly members,

a rear cone connected at its rear end to said housing and through which combustible materials from said burner assembly and air from said housing are delivered for burning therein,

said rear cone and said housing being carried by said support,

said rear cone being larger at its forward end,

a front cone carried on said support extending forwardly from said rear cone in axial alignment therewith,

said front cone at its rear end being spaced from the front end of said rear cone to provide an air entry space and being larger at its front end,

a rear water spray ring contiguous to the front end of the rear cone and having members for directing water forwardly and inwardly into the space between said cones and into the flame therein, and

a front water spray ring contiguous to the front end of the front cone and having members for directing water forwardly and inwardly beyond the front end of said front cone and into the flame advancing therebeyond.

3,861,858
THROAT MIX BURNER

Klaus H. Hemsath, Sylvania, and Arvind C. Thekdi, Toledo, both of Ohio, assignors to Midland Ross Corporation, Cleveland, Ohio

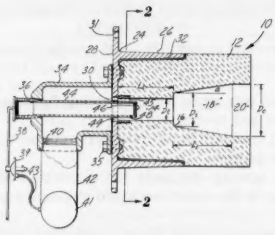
Continuation of Ser. No. 313,689, Dec. 11, 1972, abandoned. This application May 8, 1974, Ser. No. 467,928
Int. Cl. F23d *15/02*
U.S. Cl. 431—353 **1 Claim**

1. A burner operable by a source of air and fuel comprising:

a block of refractory material having a preconfigured bore extending therethrough, said bore defined by a first cylindrical chamber at one end of the block, a second larger cylindrical chamber at the opposite end of said block and an intermediate connecting frusto-conical chamber therebetween, said frusto-conical chamber having its large diameter portion equal to and adjacent said second chamber and its small diameter portion adjacent to and greater than said first chamber to define a step at the juncture between said first and second chambers;

a hollow tubular member having a closed end section within said first chamber, said end section being coaxially positioned within said first chamber to define an annulus between said member and said first chamber, said tubular member having a plurality of radially directed openings extending therethrough in said end section;

ignition means in fluid communication with said bore and operable to ignite said burner;



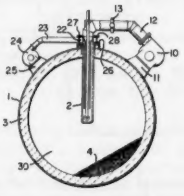
gas means operable to supply said gaseous fuel within said tubular member and through said opening into said annulus;

air means operable to supply combustion air under pressure through said annulus effective as a jet pump to draw said gaseous fuel along with said air through said first chamber, to recirculate at said step said fuel and air into a mixture sufficient to support combustion from said ignition means and to stabilize the products of combustion from said recirculated mixture at said step; the ratio of the diameter of said step to the diameter of said first chamber is in the range of 1.5 to 3.0 and the ratio of the first chamber's axial length to its diameter is 0.5 to 10.0; and the ratio of the second chamber's axial length to its diameter is 0.2 to 0.75.

3,861,859
COOLING OF ROTARY FURNACE SHELL BURNER PIPES AND METHOD

William Lyon Sherwood, Vancouver, British Columbia, Canada

Filed July 31, 1972, Ser. No. 276,750
Int. Cl. F23m *5/08;* **F27b** *7/38*
U.S. Cl. 432—4 **10 Claims**



1. In a rotary furnace in which blowing media for combustion is supplied through a shell burner pipe projecting radially

into the furnace interior, the method for cooling the burner pipes comprising the steps of:

a. positioning cooling header ducting within the shell burner pipe adjacent the inner burner pipe walls and supplying gaseous cooling media to said cooling header ducting;

maintaining said gaseous cooling media under a greater positive pressure within said cooling header ducting than the pressure of said blowing media for combustion within said shell burner pipe;

c. directing jets of said gaseous cooling media at substantial velocity in an array of cooling media jets impinging directly against the inner side walls of said burner pipe, said jets issuing from an array of jet nozzle openings in said cooling header ducting.

3,861,860

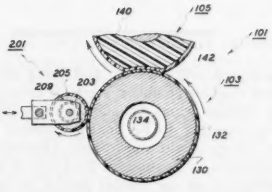
DRY FUSER ROLL CLEANING APPARATUS

Raghulinga R. Thettu, Webster, and Robert Mermelstein, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 1, 1973, Ser. No. 402,218

Int. Cl. G03g *15/00*

U.S. Cl. 432—59 **3 Claims**



1. In a dry heated pressure fusing system for fusing toner images of an electrostatic copying machine in which a heated dry fuser roll and back-up roll define a contact arc to fuse toner images onto copy sheets, an improved cleaning apparatus to release degrading contaminants and toner from the fuser roll surface comprising:

roll means movable into pressure contact with a dry heated fuser roll surface during the copying operation;

said roll means including a rigid core member covered by a sleeve made of a polymer material selected from the group of aliphatic, aromatic, or mixtures of aliphatic, aromatic polyesters,

wherein said polyester material has a melting or softening point ranging from about 120℃ to about 275℃,

wherein said sleeve has a thickness ranging from about 0.005 to about 0.030 inches,

wherein said roll means is retractable out of pressure contact with said fuser roll surface during non-fusing periods.

3,861,861

FUSER ROLL CLEANING APPARATUS

Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 10, 1973, Ser. No. 387,410

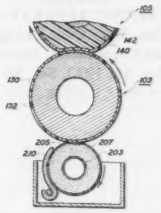
Int. Cl. G03g *15/00*

U.S. Cl. 432—59 **7 Claims**

1. In a dry heated pressure fusing system for fusing toner images of an electrostatic copying machine in which a heated dry fuser roll and back-up roll define a contact arc to fuse toner images onto copy sheets, an improved cleaning apparatus to release degrading contaminants from the fuser roll surface comprising

a roller member positioned to contact a dry heated fuser roll surface,

said roller member having a rigid core wrapped in a soft conformable material which is covered by a sleeve portion made of a material selected from the group of fluorocarbon resins, silicones and fluorosilicones and combinations thereof whereby microconformability is attained for positive transfer of contamination, and



wiping means positioned to contact said sleeve portion to remove contamination from said sleeve portion

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3,861,862

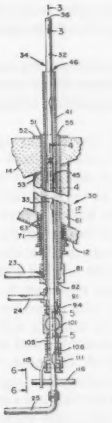
FUEL GUN FOR FLUIDIZED BED REACTOR

Andrew B. Steever, 70 Benjamin St., Old Greenwich, Conn. 06870, and Walfred W. Jukkola, 10 Guyer Rd., Westport, Conn. 06880

Filed Sept. 5, 1972, Ser. No. 286,157

Int. Cl. F27b *15/14*

U.S. Cl. 432—58 **11 Claims**



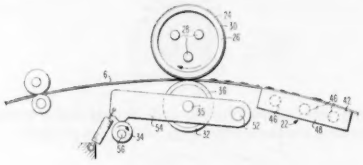
1. In a fluidized bed reactor having a constriction plate for supporting the fluidized bed, a windbox below the constriction plate with a bottom support therefore, at least one fuel gun assembly extending vertically through the constriction plate and traversing the windbox and the bottom support which comprises, a central tubular member having an axial fuel passage, a protection sleeve concentrically positioned about the fuel gun and spaced therefrom so that a first annular passageway is provided about the fuel gun to accommodate a flow of purge gas and a sealing sleeve in sealing engagement with said constriction plate and concentrically positioned about the protection sleeve and spaced therefrom so that a second annular gas passageway is provided about the protection sleeve to accommodate a flow of gas for sealing and cooling, a stuffing box about said sealing sleeve at said bottom support to provide a seal between the sealing sleeve at said bottom support to provide a seal between the sealing sleeve and the bottom support while permitting limited vertical and horizontal movement of the fuel gun assembly, means below

said bottom support for introducing purge gas into said first annular passageway, means for introducing cooling gas into said second annular passageway and means for maintaining a flow of fuel through the fuel gun.

3,861,863
FUSING APPARATUS

Bader S. Kudsi, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,383
Int. Cl. G03g *13/20*
U.S. Cl. 432—60 **6 Claims**



1. In an electrophotographic apparatus, a fusing apparatus for fixing a resinous powder image to a substrate as said substrate is moved over a predetermined path comprising:

hot roll fuser means comprising first and second rotatable members through which said substrate, carrying the powder image, passes and comes into contact with said first member, said first member having a relatively thin resilient coating surrounding a heat conducting support member, said second member being elastic and deformable by said first member when in pressure contact with said first member;

heating means disposed within said support member for heating the outer surface of said resilient coating;

pressure means for applying a meshing force between said members;

an auxiliary heating device having means to maintain the substrate in continuous contact over a substantial length with the non-image side of said substrate in said predetermined path prior to said hot roll fuser means, said auxiliary heating device having a primary source of heat comprised therein and being adapted to produce heat at a level at which substantial heating of the resinous powder results but below the level at which said substrate is damaged by continuous exposure to said heat level; and

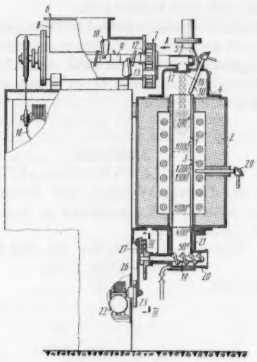
means for rotating said members at a speed so that the powder image is in contact with the coating for a time sufficient to transfer sufficient heat to the powder image in combination with the heat supplied to the resinous powder by said auxiliary heating device to raise the resinous powder to a temperature capable of fusing said powder image to said substrate without offsetting to the coating.

3,861,864
VERTICAL CONTINUOUS KILN FOR PRODUCING HIGH-PURITY METAL OXIDES AND OTHER COMPOUNDS

Aron Izrailevich Goikhrakh, Novogireevskaya ulitsa, 16, korpus 1, kv. 39; Jury Ivanovich Baikov, Artekovskaya ulitsa, 7, korpus 2, kv. 88, and Ioshua Gilovich Gorshtein, Boitsovaya ulitsa, 21, kv. 27, all of Moscow, U.S.S.R.

Filed Oct. 19, 1973, Ser. No. 408,003
Int. Cl. F27b *1/00*
U.S. Cl. 432—95 **2 Claims**

1. A continuous vertical kiln for the production of high-purity metal oxides and other compounds, comprising a vertical working chamber; a chamber for predrying starting material, said predrying chamber being located above said working chamber and in communication with the latter; heaters located externally of said working chamber, said heaters heating said predrying chamber; means for continuous charging of material into said predrying chamber; a paddle-type feeder connected to said continuous charging means, said paddle-type feeder having helically located paddles; a rotary pump communicating with said continuous charging means having a pump intake communicating with an outlet of said paddle-type feeder and a pump outlet communicating with the top

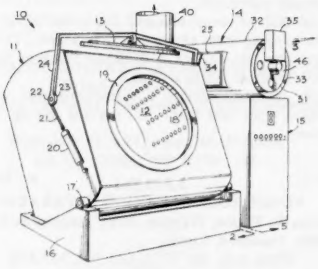


portion of said predrying chamber and being located above the inlet of said working chamber; a grating closing the outlet of said pump through which the starting material is fed into said predrying chamber to be predried therein and being subsequently conveyed into said working chamber in a cord-like form; and means for continuous discharge of said finished cord-like products from the bottom portion of said working chamber.

3,861,865
DRYING SYSTEM

Frederick W. Grantham, 12055 Goshen Ave., Los Angeles, Calif. 90066

Filed Feb. 19, 1974, Ser. No. 443,484
Int. Cl. F27b *7/02*
U.S. Cl. 432—105 **11 Claims**



1. Apparatus for drying articles by the flow of pre-heated air comprising:

a housing having an air inlet opening and an air outlet opening;

means within the housing for supporting the articles to be dried;

air conduit means mounted externally of the housing having portions in alignment with the inlet and outlet openings respectively;

a combustion chamber having a flame source end, an opposed apertured end, and a discrete side opening spaced

from said apertured end toward said flame source end and communicating with the conduit means aligned with the housing inlet opening; and

blower means coupled in series with the conduit means for directing air from the housing outlet opening to the vicinity of the apertured end of the combustion chamber.

3,861,866

CIRCULATING AIR OVEN

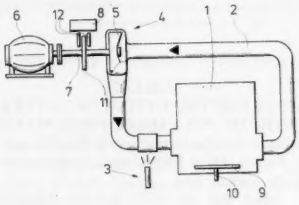
Pekka Juhani Saario, Martinkata 31, Hyvinkaa, Finland

Filed Dec. 28, 1973, Ser. No. 429,174

Claims priority, application Finland, Oct. 16, 1973, 3203/73

Int. Cl. F27b *3/22*

U.S. Cl. 432—152 **6 Claims**



1. Apparatus comprising a circulating air baking oven provided with a baking space for baking bakery products in flowing hot air, in which oven the air circulates in the baking space, a circulating air heater, a circulating air blower operatively associated with said oven and heater for circulating heated air into said oven, said blower including with impeller means, drive motor means and transmission means coupling said motor to said impeller, said impeller circulating air to said oven, and brake means operatively associated with the circulating air blower so that the blower can be stopped when desired.

3,861,867

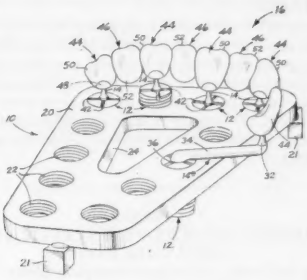
TRAY FOR OVEN-FIRING PORCELAIN DENTAL BRIDGES AND LIKE DENTAL APPLIANCES

Kenneth R. Ouhl, 167 E. 133rd St., Tacoma, Wash. 98445

Filed Aug. 29, 1973, Ser. No. 392,616

Int. Cl. F27b *21/00*

U.S. Cl. 432—258 **5 Claims**



1. A tray for oven firing porcelain dental bridges and like dental appliances comprising in combination:

a. a support plate,

b. a plurality of threaded openings transversely through the plate, arranged peripherally in spaced relation to each other and

c. a plurality of appliance-supporting pegs having threaded bases mountable in vertically adjustable threaded engagement with selected ones of the openings.

3,861,868

DYEING HUMAN HAIR WITH OXIDATION DYES AND ARGININE OR A PROTAMINE PROTEIN

Edward J. Milbrada, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Mar. 30, 1971, Ser. No. 129,557
Int. Cl. A61k *1/12*
U.S. Cl. 8—10.2 16 Claims

1. A hair dye composition comprising: (1) from about 0.1 percent to about 20 percent by weight of a compound selected from the group consisting of arginine, a protamine protein, and a peroxide-compatible salt thereof; (2) from about 0.001 percent to about 6 percent by weight of one or more oxidation dye precursors; (3) from about 0.1 percent to about 6 percent by weight of a water-soluble peroxide compound and (4) an inert diluent.

3,861,869

PRINTING TEXTILES WITH ACRYLIC ACID COPOLYMER PASTE

Wolfgang Schwindt, 4 Huttenmellerstrasse; Dieter Wolf, 165 Sternstrasse, both of 6700 Ludwigshafen; Karl Bachs, 33 Knietschstrasse, 6710 Frankenthal, and Richard Mueller, 16 Ungsteiner Strasse, 6700 Ludwigshafen, all of Germany

Filed May 29, 1973, Ser. No. 364,880
Int. Cl. D06p *1/76*
U.S. Cl. 8—62 4 Claims

1. A process for the production of a printed polyester or polyamide textile which process consists essentially of:

A. applying to said textile a print paste containing a synthetic thickener and at least one dye selected from the group consisting of acid dyes, metal complex dyes and disperse dyes, the amount of said thickener being from 0.25 to 5% by weight based on the print base, said thickener consisting essentially of a mixture of the following components:

a. from 0.5 to 50% by weight (based on the mixture of (a), (b) and (c)) of a copolymer of -

1. from 95 to 99.95% by weight, based on the copolymer, of acrylic acid and/or methacrylic acid; and
2. from 5 to 0.05% by weight of a copolymerizable monomer having two isolated double bonds and from six to fourteen carbon atoms,

b. from 10 to 80% by weight, based on the mixture of (a), (b) and (c), of an organic liquid which does not dissolve the copolymer (a), which boils at above 130°C and which prior to being mixed with components (a) and (c) contains less than 2% by weight of water, based on the liquid; and

c. from 0.5 to 50% by weight, based on the mixture of (a), (b) and (c), of a nonionic or anionic emulsifier, the carboxyl groups of the copolymer (a) having been neutralized before or during the preparation of the print paste, and

B. thereafter heating said printed material to fix and dye without intermediate drying of the print paste.

3,861,870

FABRIC SOFTENING COMPOSITIONS CONTAINING WATER-INSOLUBLE PARTICULATE MATERIAL AND METHOD

James Byrd Edwards, Roselawn, and Francis Louvaine Diehl, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 4, 1973, Ser. No. 357,130
Int. Cl. D06c *19/00*
U.S. Cl. 8—115.6 17 Claims

1. A fabric softening composition comprising

a. from about 0.5% to about 95% by weight of a cation-active fabric softener compound having from one to two straight-chain organic groups of from 8 to 22 carbon atoms; and

b. from about 95% to about 0.01% by weight of a substantially water-insoluble particulate material having

i. an average particle size in the range from about 1 to about 50 micrometers;

ii. a shape having an anisotropy of about 5:1 to 1:1;

iii. a hardness of less than about 5.5 on the Moh scale;

iv. a melting point above about 150°C; and

v. substantial freedom from exchangeable calcium and magnesium ions.

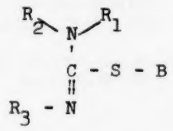
3,861,871

PROCESS FOR THE DYEING OF NATURAL AND SYNTHETIC POLYAMIDE FIBRE MATERIAL

Karl Schaffner, Ramlinsburg; Gerald Siegrist, and Hans Wegmuller, Riehen, all of Switzerland, assignors to Ciba-Geigy AG., Basle, Switzerland

Filed Mar. 15, 1972, Ser. No. 235,070
Claims priority, application Switzerland, Mar. 29, 1971, 4568/71
Int. Cl. D06p *1/86*
U.S. Cl. 8—169 12 Claims

1. A process for the dyeing of polyamide fibre material by the exhaustion process, wherein the fibre material is treated with a solution or suspension of at least one difficultly water-soluble dye salt of an anionic dye and an isothiourea in a liquid halo-lower-alkane solvent, boiling above 50°C, which contains, relative to the weight of the material being treated, an addition of 0.1 to 100% of water and up to 5% of an acid, said isothiourea is a compound of the formula



wherein

R_1, R_2 and R_3 each is hydrogen, lower alkyl, cyclohexyl, benzyl, phenethyl or phenyl, and R_2 and R_3 taken together may be a C_2- or C_3-alkylene bridge; and

B is alkyl or alkenyl of 1 to 22 carbon atoms, C_1- to C_{20}-alkoxy- or alkenoxy-ethyl, cyclohexyl, phenethyl, benzyl, or phenoxyalkyl

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3,861,872

STEAM STERILIZER

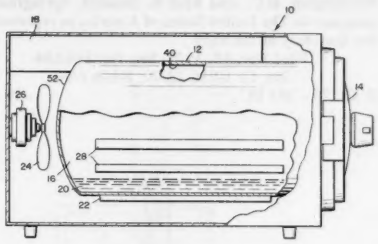
Roderick T. MacFarlane, Pittsford, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,329
Int. Cl. A61l *3/00*; F28b *1/06*; F28f *19/06*
U.S. Cl. 21—56 8 Claims

1. In a self-contained, single shell, steam generating sterilizer including a sterilizing vessel having a sterilizing chamber therein, and a fan adjacent the vessel for cooling the outside surface of the vessel, the improvement comprising:

a. the interior surface of an upper area of said vessel, overlying substantially all load-containing areas of said chamber, having a surface roughness greater than 50 micro-inches, said surface roughness being such that the forma-

tion thereon, from condensate, of water droplets, is less than that which would occur under the same conditions

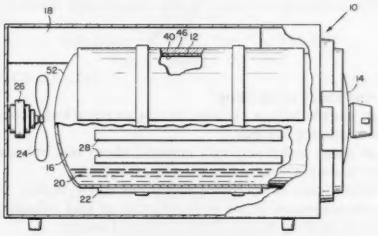


on a surface having a roughness of less than 50 micro-inches.

3,861,873
STEAM STERILIZER

Roderick T. MacFarlane, Pittsford, and Alfred C. Lawson, Fairport, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,330
Int. Cl. A61l *3/00*; F28f *13/18, 19/06*
U.S. Cl. 21—56 **14 Claims**



1. In a self-contained, single shell, steam generating sterilizer including a sterilizing vessel having a sterilizing chamber therein, and a fan adjacent the vessel for cooling the outside surface of the vessel, the improvement comprising:

a. the interior surface of an upper area of said vessel, overlying substantially all load-containing areas of said chamber, having a surface roughness greater than 50 micro-inches, said surface roughness being such that the formation thereon, from condensate, of water droplets is less than that which would occur under the same conditions on a surface having a roughness of less than 50 micro-inches; and

b. means for preventing during cool-down, rapid decrease of temperature of said interior surface of only said upper area of said vessel, whereby the temperature of said interior surface of only said upper area of said vessel is sufficiently high to flash off condensate therefrom.

3,861,874
TOTAL RECOVERY THERMAL ANALYSIS SYSTEM

Alfred E. Krc, La Porte, Tex., assignor to Shell Oil Company, Houston, Tex.

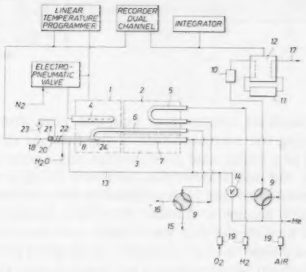
Filed Mar. 7, 1973, Ser. No. 338,707
Int. Cl. G01n *31/12*
U.S. Cl. 23—230 PC **14 Claims**

1. A total recovery thermal method for analyzing a micro sample of carbon-containing materials to obtain quantitative yield versus boiling point temperature information said method comprising:

placing the sample in a sample holder inside a hollow injection port tube located in a furnace, said tube having an opening for inserting said sample and having an inlet and outlet for passage of gas;

passing an inert carrier gas over said sample at a predetermined flow rate and heating said sample at a predetermined rate until the sample temperature is about 1,290°F and then adding oxygen-containing gas to combust any remaining components;

discharging the total flow of gas from the injection port tube to a combustion tube to convert said carbon-containing material to carbon dioxide;



discharging the flow of gas from the combustion tube to a detector for measuring the carbon dioxide content of said gas;

determining the detector response as a function of sample temperature by suitable recording means;

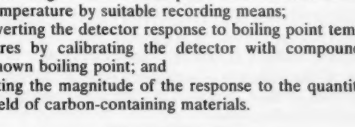
converting the detector response to boiling point temperatures by calibrating the detector with compounds of known boiling point; and

relating the magnitude of the response to the quantitative yield of carbon-containing materials.

3,861,875
STERILITY ANALYZER

Larry James Joslyn, Walworth, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed June 8, 1973, Ser. No. 368,452
Int. Cl. A61l *3/02*; G01n *33/16*
U.S. Cl. 23—230 B **9 Claims**



8. A method for determining the total number of a given micro-organism killed during a sterilization process comprising the steps of:

a. continuously monitoring a plurality of sterilization affecting conditions including temperature and humidity within a sterilizing chamber with a plurality of sensors capable of issuing a signal representative of each of the sensed conditions;

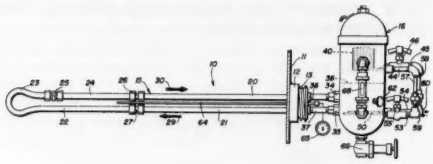
b. continuously converting each of said signals to an output indicative of the death rate for said given micro-organism at the sensed conditions; and

c. integrating said death rates over a timed interval to obtain the total number of said given micro-organism killed in said timed interval.

3,861,876
CONSTANT TEMPERATURE COLD-END CORROSION PROBE

Reed S. Robertson, Glen Ellyn, and William R. Watson, Oaklawn, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed July 30, 1973, Ser. No. 384,072
Int. Cl. G01n 17/00
U.S. Cl. 23—230 C 14 Claims

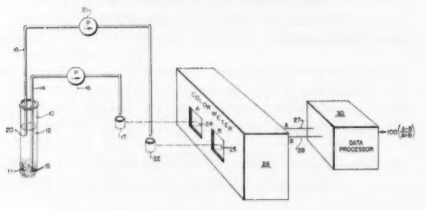


1. A constant temperature cold-end corrosion probe for determining the corrosion rate of the flue gas stream in the cold end of a boiler, said probe comprising a pipe loop having an upper run and a lower run, said runs being arranged in a vertical plane and said loop adapted for installation in the flue gas stream having a tubular corrosion specimen, a tank mounted outside the flue gas stream and connected to both ends of said pipe loop at vertically spaced ports in the tank, an organic solvent type coolant in the tank having a boiling point about the same as that where maximum corrosion would occur for the specimen, and cooling means in the tank maintaining the coolant at a temperature below the boiling point thereby producing circulation through the pipe loop and maintaining the temperature of the specimen constant at about the boiling point of the coolant.

3,861,877
OPTICAL ANALYSIS OF FLUIDS

Baldev A. Matharani, Medfield, and Nathan M. Hirsch, Brookline, both of Mass., assignors to Clinical Technology Incorporated, Brookline, Mass.

Filed Jan. 21, 1974, Ser. No. 434,791
Int. Cl. G01n 33/16, 21/24
U.S. Cl. 23—230 B 7 Claims

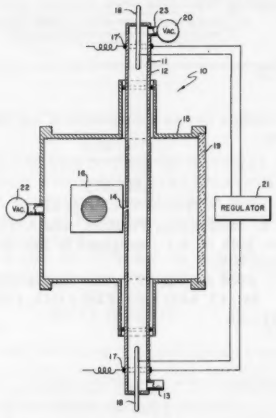


1. A method for measuring the percentage change in optical density of a liquid due to aggregation of particular consitiuents comprising:
a. determining the optical density of the aggregated portion of the liquid;
b. determining the optical density of the unaggregated portion of the liquid; and,
c. computing the percentage change in density of the aggregated portion due to aggregation in accordance with the formula $A-B/A+B \times 100=\%$ density change where A is the aggregated portion and B is an unaggregated portion both measured in optical density units.

3,861,878
GENERAL PURPOSE ANALYZER FOR PLASMA MEDIA

James J. De Corpo, Springfield, Va.A; Michael V. McDowell, Washington, D.C., and Fred E. Saalfeld, Springfield, Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed Dec. 19, 1972, Ser. No. 316,606
Int. Cl. G01n 23/00; H05h 1/00
U.S. Cl. 23—253 PC 10 Claims



1. Apparatus comprising:
a. an upright hollow cylinder having an electrically conductive coating thereon;
b. an outer jacket sealingly engaged about said cylinder;
c. a vacuum source connected to said jacket;
d. inlet means in the lower portion of said cylinder;
e. exhaust means in the upper portion of said cylinder;
f. lower heating means above said inlet means;
g. upper heating means below said exhaust means;
h. a sampling port in said cylinder between said upper and lower heating means, said port being about 25 microns in diameter and flush with the inner wall of said cylinder;
i. a plasma identifying means located within said jacket and adjacent to said sampling port at such distance that the traverse time of a plasma sample from said sampling port to said plasma identifying means is from about 3 to about 5 microseconds.
j. means to regulate said upper and lower heating means, so that a specific temperature profile is maintained in said cylinder.

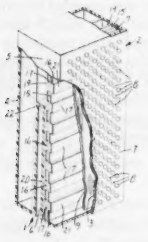
3,861,879
PYROELECTRIC GAS DOSIMETER

Allen L. Taylor, Woodbury Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 2, 1974, Ser. No. 430,054
Int. Cl. G01n 31/10, 25/22
U.S. Cl. 23—254 E 11 Claims

1. An apparatus that detects the presence of a particular gas and comprises:
a housing that is open to the surrounding atmosphere to permit the atmosphere to flow therein;
a poled pyroelectric layer of material disposed in said housing;
a pair of conductive plates disposed on said layer which plates are positioned opposite from one another on each planar surface of said layer;

a catalyst coated on at least one of said plates; and



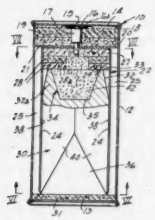
electronic circuit means for sensing electrical signals on said conductive plates and indicating the presence of the gas desired to be detected.

3,861,880

OXYGEN GENERATOR CELL

Tommy Lewis Thompson, Melbourne, Fla., assignor to Dow Chemical Investment and Finance Corporation, Midland, Mich.

Filed Mar. 6, 1973, Ser. No. 338,458
Int. Cl. B01j *7/00, 7/02*
U.S. Cl. 23—281 **10 Claims**



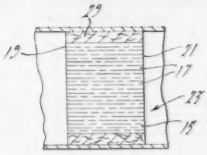
1. A chemical oxygen generator cell which comprises a disposable canister having an end wall with an orifice therethrough, a puncturable seal closing the orifice of said end wall, a chlorate candle in said canister having a reduced area starting end, a reduced area finishing end, and a main body portion therebetween, porous mats in the canister clamping the candle against axial shifting in the canister, a baffle overlying the candle in the canister and having side legs embracing the main body portion of the candle centering the candle from the side wall of the canister and providing oxygen flow paths between the candle and side wall of the canister communicating through the porous mats with the orifice in the end wall of the canister, a sealed housing in said canister adjacent said orifice and containing a fluid for activating the candle, ignition material between the candle and said sealed housing, and means accessible through the orifice of the canister for releasing fluid from the sealed housing to activate said ignition material and thereby actuate the candle for delivering oxygen from the canister through said orifice.

3,861,881

CATALYST CONVERTER WITH MONOLITHIC ELEMENT

Hubert H. Nowak, Jackson, Mich., assignor to Tenneco Inc., Racine, Wis.

Division of Ser. No. 207,794, Dec. 14, 1971, Pat. No. 3,771,967. This application Feb. 20, 1973, Ser. No. 333,952. The portion of the term of this patent subsequent to Nov. 13, 1990, has been disclaimed
Int. Cl. F01n *3/14;* **B01j** *9/04*
U.S. Cl. 23—288 R **4 Claims**



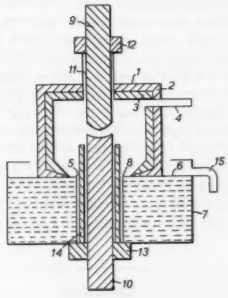
1. In a catalytic reactor containing a frangible refractory catalyst element and a metallic shell containing said element, the improvement which comprises a means for securing said catalyst element to a metal support surface of said metallic shell comprising a resilient layer of high temperature resistant nonmetallic insulating fibers having one side in contact with the outer surface of the element and the other side in contact with said metal surface and dried adhesive material in said layer, said adhesive material bonding the metal support surface and outer surface of the element to the layer of fibers.

3,861,882

PROCESS FOR PREPARING RED PHOSPHORUS

Edward James Lowe, Stourton, nr. Stourbridge, and Frederick Arthur Ridgway, Stourbridge, both of England, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation of Ser. No. 599,915, Dec. 7, 1966, abandoned. This application Oct. 12, 1971, Ser. No. 188,604
Int. Cl. C01b *25/02*
U.S. Cl. 23—293 R **5 Claims**



1. Method of preparing red phosphorus which comprises contacting phosphorus vapor which is at a temperature above 800° centigrade and which contains a substantial proportion of P_2 molecules, with sufficient inert liquid which is at a temperature below the solidification point of red phosphorus, to condense the vapor.

JG EAS

3,861,883

METHOD OF MAKING WELDED JOINTS FOR LARGE VESSELS SUBJECT TO HYDROGEN EMBRITTLEMENT

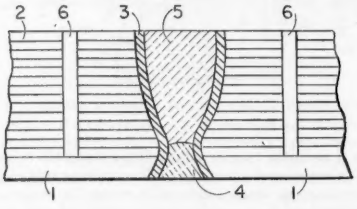
Yoshimitsu Uto; Yasuhiro Iwasaki, both of Hiroshima; Yoshihiro Yamamoto, Hiroshima-ken; Tsutomu Ooe, Hiroshima-ken, and Ryohei Nakayama, Hiroshima-ken, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 869,253, Oct. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 627,889, April 3, 1967, abandoned. This application Apr. 26, 1972, Ser. No. 247,634

Claims priority, application Japan, Apr. 12, 1966, 41-23114

Int. Cl. B23p *3/00*

U.S. Cl. 29—196.1 5 Claims



1. A welded joint for securing two sections of a large vessel together in which the interior of the large vessel is subject to hydrogen embrittlement, at least one of the sections to be joined being formed of a multilayered laminated construction composed of an interior layer and a plurality of outer layers which merely contact one another without metallurgical joining, said interior layer of the laminated construction providing the interior surface of the vessel and being formed of a material resistant to hydrogen embrittlement and said outer layers being formed of a steel selected from the group consisting of (a) steel containing from 1–4% Cr and from 0.3–1.5% Mo and (b) steel containing from 0.3–0.7%Mo, and the edge surface on each of said sections being disposed in opposed relationships and forming a welding groove therebetween, a weld deposit layer of austenitic stainless steel which is only slightly hardenable by the heat of welding and is resistant to hydrogen embrittlement being formed on each of said edge surfaces of the welding groove extending from the surface constituting the interior surface of the vessel for at least the thickness of the layer forming the interior layer of the laminated construction and including an annealed zone between said weld deposited layer and said edge surface on which it is deposited, a weld deposit of austenitic stainless steel which is only slightly hardenable by the heat of welding and is resistant to hydrogen embrittlement being fused in the welding groove between said weld deposit layers on said edge surfaces and forming the interior surface of said welding groove and having a thickness at least greater than the thickness of the interior layer of the multilayered laminated construction, and a weld metal which is only slightly hardenable by the heat of welding being fused within the remaining part of said welding groove extending outwardly to the exterior surface of said sections forming the vessel.

3,861,884

COMPOSITE METAL ARTICLE

James M. Popplewell, Guilford, Conn., and Sheldon H. Butt, Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 13, 1973, Ser. No. 424,569

Int. Cl. B32b *15/20*

U.S. Cl. 29—199 9 Claims

5. A composite strip or wire having good galvanic compatibility with aluminum including a first component of nickel or a nickel base alloy and a second component of a copper alloy consisting essentially of a material selected from the group consisting of iron from 0.5 to 5.0%, cobalt from 0.3 to 2.0% and mixtures thereof, balance copper.

9. An electrical terminal having high strength, good corrosion resistance and good galvanic compatibility including an aluminum or copper wire coupled to a composite having a first component of nickel or a nickel base alloy and a second component of a copper alloy consisting essentially of a material selected from the group consisting of iron from 0.5 to 5.0%, cobalt from 0.3 to 2.0% and mixtures thereof, 0.1 to 0.5% of a material selected from the group consisting of phosphorus, aluminum, zinc, tin, silicon, manganese and mixtures thereof, balance copper.

3,861,885

CARBON BLACK FUEL PRODUCTION

Frank C. Schora, Palatine, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Sér. No. 182,805, Sept. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 795,498, Jan. 31, 1969, abandoned. This application Nov. 5, 1973, Ser. No. 412,840

Int. Cl. C10l *5/00*, *9/10*; C09c *1/48*

U.S. Cl. 44—1 R 18 Claims

1. A process for the production of a non-polluting substantially ash free, sulphur free carbon black fuel comprising:

a. devolatilizing a pulverized solid carbon-aceous fossil fuel containing ash and sulphur to provide a devolatilized fossil fuel and a hydrocarbon stream;

b. oxidizing the devolatilized pulverized solid carbonaceous fossil fuel with a gas containing oxygen to form carbon monoxide-rich gas containing sulphur and ash;

c. removing the sulphur and ash from the carbon monoxide-rich gas;

d. passing said carbon monoxide-rich gas through a fluidized bed of solid material in a carbon deposition zone at least partly catalytic with respect to carbon deposition, said bed being maintained at a temperature below said carbon monoxide-rich gas temperature;

e. maintaining said solid bed material at a substantially constant temperature by contact with heat exchange surfaces to quench said carbon monoxide-rich gas to said bed temperature and to precipitate in said bed finely-divided carbon by the conversion of said carbon monoxide-rich gas while forming an exhaust gas therefrom;

f. maintaining the flow of said carbon monoxide-rich gas and said exhaust gas to entrain said carbon black therein;

g. desulphurizing the hydrocarbon stream; and

h. admixing at least a portion of the desulphurized hydrocarbon with said carbon black to produce a nonpolluting substantially ash free, sulphur free fuel having good ignition and combustion characteristics.

3,861,886

MATERIAL IDENTIFICATION CODING METHODS AND SYSTEMS

Thomas P. Meloy, Reston, Va., assignor to Melpar, Inc., Falls Church, Va.

Continuation of Ser. No. 775,519, Nov. 13, 1968, abandoned. This application Sept. 30, 1971, Ser. No. 185,417

Int. Cl. C10l *1/32*

U.S. Cl. 44—51 20 Claims

1. A method of tagging and identifying bulk material, which comprises examining said bulk material to determine the presence of micro-particles therein and to determine the properties of such micro-particles, providing each of different batches of said material with a corresponding quantity of micro-particles insoluble in said material, each quantity having properties different from the properties of micro-particles previously determined to be present in the bulk material and also different from the properties of the other quantities, and dispersing the provided micro-particles throughout the corresponding batches in suspension until the provided micro-

particle concentration is such that the properties are invisible to the naked eye.

3,861,887

PROCESS FOR CONTROLLING POLLUTION AND CONTAMINATION IN PAINT OR LACQUER SPRAY BOOTHS

Steven W. Forney, 1955 Teaneck Cir., Woxom, Mich. 48096

Filed Nov. 1, 1973, Ser. No. 411,679
Int. Cl. B01d *47/00*
U.S. Cl. 55—19 **5 Claims**

1. In a process for controlling pollution and contamination in paint or lacquer spray booths in which water is used to wash the air in the spray booth and to remove over-sprayed paints or lacquers and solids are removed from the water which is then recirculated for further use in washing the air in the spray booth, the improvement which comprises adding to said water a quantity of a blend of a water soluble electrolyte salt of an amphoteric metal and a polycationic water dispersible polymer, said quantity being sufficient to reduce the tackiness of paints and lacquers and thereby reduce the tendency of over-sprayed paints and lacquers to adhere to walls, ceilings and floors of said spray booths, and said polymer also being effective to condition paint and lacquer solids removed with said water so that they can be separated from the water which is then returned for recirculation in the process.

3,861,888

USE OF CO_2 IN ARGON-OXYGEN REFINING OF MOLTEN METAL

Barrett Henry Heise, Valley Cottage, and Roger Nels Dokken, Katonah, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 28, 1973, Ser. No. 374,635
Int. Cl. C21c *5/30*
U.S. Cl. 75—60 **4 Claims**

1. In a process for decarburizing a chromium-containing molten steel characterized by the sub-surface injection of oxygen and at least one inert gas selected from the group consisting of helium, neon, krypton, argon, xenon and nitrogen, into a mass of said molten steel, wherein at least a portion of said oxygen reacts with the carbon in said molten steel to form a volatile carbon oxide, comprising a first phase of decarburization wherein the temperature of said molten steel is adjusted to the desired operating range; a second phase of decarburization wherein the carbon content of the molten steel is reduced to a predetermined value corresponding approximately to the carbon content of the melt in equilibrium with CO at a partial pressure of 1 atmosphere and at a temperature within said desired operating range; and a third phase of decarburization wherein the carbon content of the melt is reduced from said predetermined value to approximately the desired carbon content of the molten steel, the improvement comprising:

injecting a gas consisting essentially of CO_2 into the molten steel during said third phase of decarburization in an amount less than that defined by the formula:

$$F_{CO} = [F_I P/1-P-2XF_O]$$

where:

F_{CO} = flow rate of CO_2, (cfm)

F_I = flow rate of said inert gas, (cfm)

P = equilibrium partial pressure of CO for the particular bath temperature and carbon content of the molten steel, (atmospheres), and

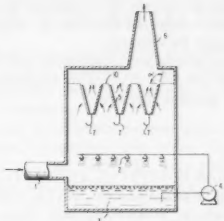
X = carbon removal efficiency in the absence of CO_2.

3,861,889

PROCESS FOR REMOVING DUST FROM A GAS STREAM

Toshinori Takae; Toyotaro Kawabe, and Shohei Maeno, all of Takaishi City, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation-in-part of Ser. No. 205,601, Dec. 7, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 427,636
Claims priority, application Japan, Dec. 16, 1970, 45-11870
Int. Cl. B01d *53/14*
U.S. Cl. 55—70 **11 Claims**



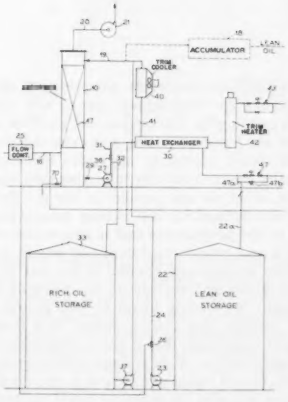
1. A process for removing a soluble solid dust from a gas steam containing the same which comprises spraying said gas stream with a solvent for said dust to wash the major portion of said dust into said solvent and removing the remaining portion of said dust from said gas stream by passing the depleted gas stream through a layer of a foamed material having a non-cellular porosity of over 90 percent and impregnated with said solvent at a surface velocity of less than 2 meters per second, the angle of the surface of said layer to the horizontal being an obtuse angle of less than 120°, whereby the pressure loss is less than 100 mm H_2O (water column).

3,861,890

GASOLINE VAPOR RECOVERY SYSTEM AND METHOD

Alex J. Doncer, Burbank, and Harold R. White, New Lenox, both of Ill., assignors to Alar Engineering Corporation, Burbank, Ill.

Filed May 3, 1973, Ser. No. 357,007
Int. Cl. B01d *53/14*
U.S. Cl. 55—88 **5 Claims**



1. In a method of recovering gasoline from gasoline vapor, including

the provision of a lean oil storage tank and a rich oil storage tank,

establishing a constant feed of lean oil from the lean oil storage tank to an absorber,

withdrawing rich oil from the bottom of the absorber and passing to the rich oil storage tank,

passing the rich oil from the rich oil storage tank through a heat exchanger,

passing part of the oil from the heat exchanger to a trim cooler,

forcing the oil by the trim cooler to the absorber, and

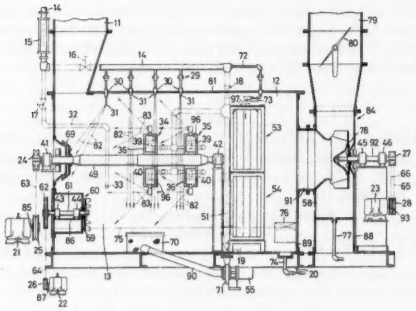
passing the oil from the first heat exchanger through a second heat exchanger to a stripper and stripping the gasoline vapor from the the rich oil, removing the gasoline as a vapor by vacuum,

and then compressing and condensing the vapor and withdrawing the condensed vapor by blending in the form of a required gasoline mixture.

3,861,891
GAS PURIFYING APPARATUS

Masaru Noguchi, Kanagawa-ken; Seikichi Nishimura, Tokyo; Tatsuo Kuwahara, Hokkai-do, and Katsuya Minemura, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corp. and Riken Koki Co., Ltd., both of Tokyo, Japan

Filed May 24, 1972, Ser. No. 256,597
Int. Cl. B01d *47/08, 47/16*
U.S. Cl. 55—230 **9 Claims**

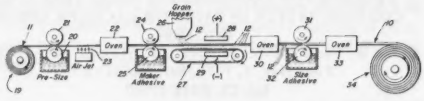


1. A gas purifying apparatus comprising a casing, a gas feeding opening for feeding said gas to said casing, a gas discharging opening for discharging said gas from said casing, and at least one liquid atomizing apparatus positioned in said casing, said liquid atomizing apparatus including a liquid storing means, means rotatably mounting said storing means for rotation about an axis parallel to the gas flow, a liquid storing groove defined by said storing means, nozzle means positioned on the periphery of said storing means and communicating with said groove, outlets of said nozzle means facing in a direction substantially parallel to the axis of rotation of said storing means and opposite to the direction of gas flow, feeding means for feeding liquid to said groove, and drive means for rotating said storing means, said feeding means injecting said liquid such that it has a component of force in the rotational direction of the rotating storing means whereby the injection of said liquid contributes to the rotation of said storing means, whereby the atomized liquid ejected spirally by centrifugal force from said nozzle means of said liquid atomizing apparatus is adapted to remove dust and desulfurize the gas passing through said casing.

3,861,892
COATED ABRASIVE MATERIAL AND MANNER OF MANUFACTURE

Norvell E. Wisdom, Jr., Watervliet, and Matthew T. Gladstone, Scotia, both of N.Y., assignors to Norton Company. Troy, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,583
Int. Cl. B24d *11/00*
U.S. Cl. 51—295 **8 Claims**

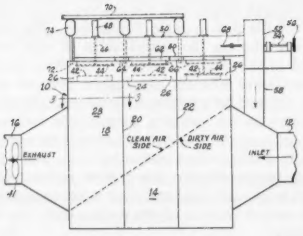


1. Open mesh coated abrasive material comprising in combination an open mesh woven fabric backing member of interlaced warp and fill yarns, an adhesive binder composition comprising a resinous condensation product of a composition comprising phenol and formaldehyde coating said yarns, and having a controlled degree of friability in at least the outermost surface thereof such that the adhesive bond will break when the abrasive material is rubbed against a surface being ground into small particles not more than a few times larger in average diameter than the individual abrasive grains, abrasive grains adhered to the yarns by means of the adhesive binder said abrasive grains being smaller in size than the mesh openings of the open mesh fabric, and a water insoluble and water resistant coating intermediate said adhesive binder and the yarns of said open mesh fabric backing member, said coating comprising an interpolymer comprising from about **5** to **70%** by weight ethylene, from about **30** to **95%** by weight vinyl chloride, and from about **1** to **5%** by weight of a polar monomer of which at least about **50%** by weight is acrylamide said coating impregnating the yarns and encapsulating them whereby a coated abrasive material is provided that substantially retains its initial tear strength and flexibility characteristics whether used in wet or dry grinding applications.

3,861,893
FILTER DEVICE WITH SCAVENGER SYSTEM

Donald W. Smith, and Fredric W. Prill, both of Aurora, Ill., assignors to Barber-Greene Company, Aurora, Ill.

Filed Sept. 5, 1972, Ser. No. 286,215
Int. Cl. B01d *45/18*
U.S. Cl. 55—302 **7 Claims**



1. In a filter device which makes use of a housing divided into a dirty gas chamber and a clean gas chamber, an inlet communicating with the dirty gas chamber and an outlet connected by a passage with the clean gas chamber, a plurality of filter tubes extending into the dirty gas chamber and withdrawal means communicating with the outlet to cause flow of gas from the dirty gas chamber through the filter tubes into the clean gas chamber and through the passage to the outlet with the separation of solid particles on the ingoing side of the filter tubes as the gas filters therethrough, and means operable

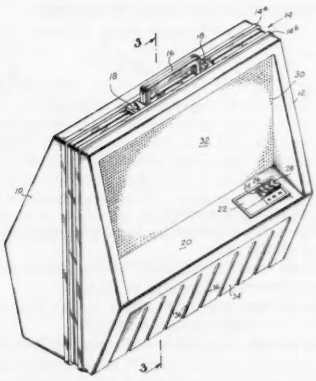
periodically to dislodge collected particles from the ingoing side of the filter tubes during a cleaning cycle, the improvement which comprises a scavenger hood, a passage communicating the scavenger hood with the clean gas chamber, a gas withdrawal means in communication with the scavenger hood, valve means mounted for movement between blocking and unblocking position with respect to the passage communicating the clean gas chamber with the scavenger hood and unblocking and blocking positions respectively with respect to the passage communicating the clean gas chamber with the outlet, in such manner that when the valve means is in blocking position with respect to the scavenger passage, it is in unblocking position with respect to the outlet passage to enable gas to pass from the clean gas plenum chamber to the outlet while blocking passage to the scavenger hood, and when the valve means is in unblocking position with respect to the scavenger passage, it is in blocking position with respect to the outlet passage to enable gas to pass from the clean gas plenum chamber to the scavenger hood while blocking passage to the outlet while gas continues to flow in one direction from the dirty gas chamber, through the filter tubes and into the clean gas chamber and then from the clean gas chamber to the scavenger hood or the passage connecting the clean gas chamber with the outlet, depending upon the position of the valve means.

3,861,894

PORTABLE CLEAN-AIR GENERATOR

Robert Claude Marsh, Albuquerque, N. Mex., assignor to Bio-Dynamics, Inc., Castleton, Ind.

Filed Oct. 13, 1972, Ser. No. 297,332
Int. Cl. B01d *50/00*
U.S. Cl. 55—316 **11 Claims**



10. A portable clean-air generator adapted to receive a high efficiency filter of the type that is mounted in a frame extending around the entire periphery of the filter and has a continuous outwardly extending flange around said frame and a continuous deformable portion formed on said flange, said generator comprising:

a portable case including first and second separable sections;

means on said first and second sections for engaging and sandwiching said deformable portion about its entire length when the case is closed, whereby a seal is effected between the flange and the engaging means;

latch means for holding the first and second sections in a closed position; and

circulation means for circulating unfiltered air through said case and said filter so that a flow of filtered air is exhausted from said case, the case including an inlet opening, coupled to the circulation means, and an outlet opening disposed along the path of the flow of air in the case on the opposite side of the filter from the inlet opening.

3,861,895

METHOD FOR REDUCING SMOKE AND DUST IN THE PROCESS FOR MANUFACTURING MINERAL WOOL

John H. Tarazi, Pasadena, Calif., assignor to Arthur C. Withrow Company, Los Angeles, Calif.

Division of Ser. No. 133,756, April 13, 1971, abandoned. This application Oct. 19, 1972, Ser. No. 299,099
Int. Cl. C03b *19/04*; **C03c** *25/02*
U.S. Cl. 65—3 **6 Claims**

1. In a method of making mineral wool by high-speed centrifugation of molten mineral to form initially hot mineral fibres, the fibres then being collected to form the wool, the improvement comprising:

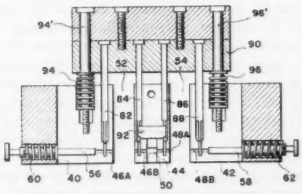
applying to the initially hot mineral wool fibres a treating composition, comprising from 30 to 1% by weight of a non-ionic surfactant, and from 70 to 99% by weight of a polyalkylene glycol having a viscosity in the range of from about 35 to about 180,000 cs. at 100°F, whereby dust generation created during the high temperature centrifugation for forming the mineral fibres from molten mineral is reduced or eliminated substantially without generation of smoke.

3,861,896

METHOD FOR HEAT SEALING METAL SLEEVES TO AN INSULATED SLEEVE

Donald J. Belknap, P.O. Box 325, Mountain Home, N.C. 28758

Division of Ser. No. 140,260, May 4, 1971, Pat. No. 3,763,390, which is a division of Ser. No. 760,852, Sept. 19, 1968, Pat. No. 3,578,429. This application July 5, 1973, Ser. No. 376,279
Int. Cl. C03c *27/02*
U.S. Cl. 65—59 **3 Claims**



1. A method of manufacturing envelopes for incandescent lamps and the like which comprises providing a sleeve of insulating material heat-sealable with metal, providing a pair of metal terminal sleeves of outer diameter less than the inner diameter of said insulating sleeve, partially inserting said metal sleeves into the opposite ends of said insulating sleeve, and transferring heat to the regions of the ends of the insulating sleeve sufficient to seal the said ends to said metal sleeves without deforming the main portion of the insulating sleeve, heat being applied to said metal sleeves at regions remote from said ends of said insulating sleeve and being conducted along said metal sleeves to said ends.

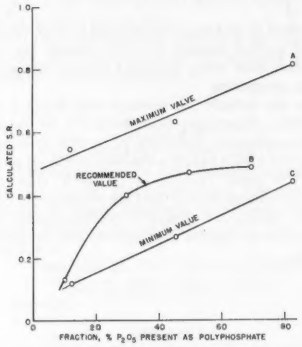
3,861,897
STABILIZATION OF POLYPHOSPHATE FERTILIZER SOLUTIONS

Alva W. Frazier, Florence, Ala., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation-in-part of Ser. No. 141,366, May 7, 1971, Pat. No. 3,711,268, which is a continuation of Ser. No. 82,809, Oct. 21, 1970, which is a continuation-in-part of Ser. No. 30,264, April 20, 1970, abandoned. This application Oct. 13, 1972, Ser. No. 297,246

Int. Cl. C05b 7/00

U.S. Cl. 71—34 1 Claim



EFFECT OF POLYPHOSPHATE ON VALUE OF S.R.

1. A process for stabilizing ammonium polyphosphate fertilizer solutions containing about 50 percent polyphosphate levels against the precipitation of principally the dissolved impurities from the group consisting of magnesium, aluminum, iron, and mixtures thereof, said impurities derived from said wet-process phosphoric acid and providing cations of their dissolved salt solutions which give rise to post-precipitation of complexes therewith with the ammonium polyphosphates in said solutions, said ammonium polyphosphate solutions containing up to about 11 percent by weight nitrogen and 37 percent by weight phosphorus, expressed as P_2O_5, said ammonium polyphosphate solutions derived in whole or at least in part from the ammoniation of wet-process phosphoric acid containing greater than 0.1 percent magnesium and greater than 0.1 percent fluoride by a process comprising the addition to said ammonium polyphosphate solutions of a fluorine compound, said fluorine compound selected from the group consisting of simple fluorides, fluosilicates, and mixtures thereof, and wherein the amount of fluorine added to said ammonium polyphosphate solutions for complexing principally the magnesium and aluminum therein to prevent their precipitation is equivalent to a sequestration ratio of between about 0.4 and about 0.5, said sequestration ratio being determined by the empirical formula

Sequestration Ratio (S.R.) = Wt. % F/Wt.% MgO + 3 wt% Al_2O_3 + 1/3 wt% Fe_2O_3

3,861,898
PHOSPHONAMIDE PLANT GROWTH REGULANTS

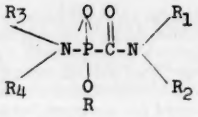
Arthur Gilbert Jelinek, 2500 Lindell Rd., Wilmington, Del. 19808

Continuation-in-part of Ser. No. 79,252, Oct. 8, 1970, Pat. No. 3,712,936. This application Oct. 19, 1972, Ser. No. 299,093

Int. Cl. A01n

U.S. Cl. 71—76 4 Claims

1. A plant growth regulant composition comprising suitable agricultural adjuvants and modifiers in combination with a compound of the formula:



where

R is alkyl of one to four carbon atoms or alkenyl of two to four carbon atoms,

R_1 is hydrogen;

R_2 is hydrogen;

R_3 is hydrogen or alkyl of one to four carbon atoms; and

R_4 is hydrogen or alkyl of one to four carbon atoms.

3,861,899
HERBICIDAL N-(ALKOXYPHOSPHINYLOXY)-AND N-(ALKOXYPHOSPHINO-THIOYLOXY)-N-ALKYL-N'-PHENYLUREAS

Hans Moser, Basel, and Christian Vogel, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

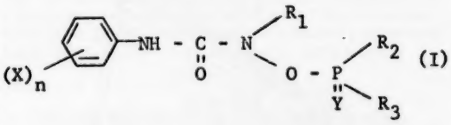
Division of Ser. No. 41,368, May 28, 1970, Pat. No. 3,726,947. This application Jan. 22, 1973, Ser. No. 325,684

Claims priority, application Switzerland, June 6, 1969, 8644/69

Int. Cl. A01n 9/36

U.S. Cl. 71—86 6 Claims

1. A herbicidal composition which comprises a herbicidally effective amount of a compound of the formula



(I)

wherein

R_1 represents methyl or ethyl,

R_2 and R_3 each independently represent lower alkoxy or di-lower alkylamino,

X represents lower alkyl, lower alkoxy, lower alkylthio, halogeno loweralkyl, halogen or cyano,

Y represents oxygen or sulfur, and

n represents an integer from 0 to 2,

and an agriculturally acceptable carrier or distributing agent.

3,861,900
CONTROL OF UNWANTED PLANTS

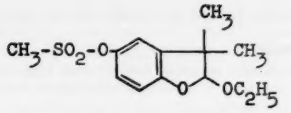
Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/-Rhein, Germany

Filed Mar. 26, 1973, Ser. No. 344,565

Int. Cl. A01n 9/28

U.S. Cl. 71—88 1 Claim

1. A process for controlling the growth of unwanted plants with a combined effective amount of (a) and (b) wherein the soil in which unwanted plant growth is to be prevented is treated before emergence of the unwanted plants with a compound of the formula (a)



and, after emergence of the unwanted plants, the crop plants and unwanted plants are treated with (b)

1-phenyl-4-amino-5-chloropyridazone-(6)

wherein the ratio of (a) to (b) is from about 1:2 to 2:1.

3,861,901

PLANT GROWTH REGULATION

Robert R. MacMurray, 550 East Third St., Bloomsburg, Pa. 17815

Continuation-in-part of Ser. No. 815,493, April 11, 1969, Pat. No. 3,697,253. This application Oct. 4, 1971, Ser. No. 186,508

Int. Cl. A01n *9/14*

U.S. Cl. 71—103 **10 Claims**

1. A method of increasing crop yield of peppers comprising applying directly to the plant N,N-di-n-propyl-4-trifluoromethyl-2,6-dinitroaniline or a chlorinated phenoxy acid or salt thereof in a concentration and amount sufficient to increase the crop yield.

3,861,902

NEW HERBICIDAL COMPOSITIONS FOR POST-EMERGENCE WEED CONTROL AMONG CEREAL CROPS

Pierre Poignant, Lyon, and Jacques Rognon, Ecully, both of France, assignors to Pepro Societe Pour le Developpment et la Vente de Specialites Chemiques, Lyon, France

Filed Apr. 17, 1973, Ser. No. 352,083

Claims priority, application France, Apr. 21, 1972, 72.14952

Int. Cl. A01n *9/24*

U.S. Cl. 71—108 **6 Claims**

1. A herbicidal composition comprising (i) N-(4-isopropylphenyl)-N',N'-dimethylurea and (ii) 2-(2-methyl-4-chlorophenoxy)-propionic acid or a derivative thereof, in an amount sufficient to kill wild spring oats without substantial killing of cereal crops, said urea or derivative thereof being present in said composition in proportion by weight of 0.5–2.0 to said acid or derivative thereof, together with (iii) an inert carrier or diluent.

3,861,903

UPGRADING OF CHROMITE AND OTHER FERRUGINOUS ORES

Thomas Joseph Coyle, and Herbert Joseph Bovey, both of Johannesburg, South Africa, assignors to Anglo American Corporation of South Africa Limited, Johannesburg, South Africa

Continuation of Ser. No. 860,063, Sept. 22, 1969, abandoned. This application Aug. 7, 1972, Ser. No. 278,225

Claims priority, application South Africa, Sept. 26, 1968, 68/6242

Int. Cl. C22b *1/00*

U.S. Cl. 75—1 **11 Claims**

1. A method of upgrading an ore selected from the group consisting of chromite, ilmenite and phosphate which is rendered lowgrade by the presence of iron oxide and which ore has been roasted to reduce the iron oxide to the metallic state consisting in the steps of intimately admixing a mixture of the roasted ore and an iron salt solution, selected from ferrous sulphate and ferrous chloride solution, with a gas containing free oxygen, at about ambient pressure, with the result that the iron in roasted ore reduces ferric salts in solution to the ferrous state while simultaneously oxygen in the gas oxidizes ferrous salts to the ferric state so that metallic iron is leached from the roasted ore to leave insoluble residual ore particles and to form insoluble hydrated iron oxide, and separating the residual ore particles from the solution and the hydrated iron oxide to provide an ore product which is less diluted by the presence of iron oxide.

3,861,904

METHOD FOR PRODUCING ALUMINUM METAL DIRECTLY FROM ORE

Donald F. Othmer, 333 Jay St., Brooklyn, N.Y. 11201

Continuation-in-part of Ser. Nos. 103,765, Jan. 4, 1971, Pat. No. 3,793,003, and Ser. No. 308,059, Nov. 20, 1972,. This application June 15, 1973, Ser. No. 370,310

Int. Cl. C22b *21/04*

U.S. Cl. 75—68 R **28 Claims**

1. The process of producing aluminum metal from an aluminum halide by steps comprising:

a. charging said aluminum halide and elemental sulfur into a reactor;

b. reacting in said reactor said aluminum halide with said sulfur in a fluid phase to form aluminum metal and a sulfur halide; and

c. separating said aluminum metal from said sulfur halide and any excess of said reactants.

3,861,905

PROCESS FOR ACCELERATING METALLURGICAL REACTIONS

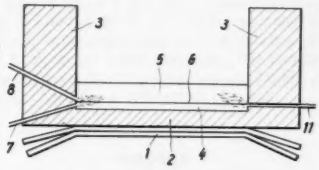
Eberhard Steinmetz, and Jurgen Kuhn, both of Bochum, Germany, assignors to Gesellschaft zur Forderung der Eisenhuttentechnix GmbH, Dusseldorf, Germany

Filed Feb. 14, 1972, Ser. No. 226,303

Claims priority, application Germany, Feb. 16, 1971, 2107263

Int. Cl. C22b *9/12*

U.S. Cl. 75—93 R **17 Claims**



1. A continuous metallurgical refining process in which metal and slag contact one another, comprising continuously moving a stream of the metal in counter-current flow to continuously flowing slag in a counter-current channel, injecting at least one jet of a gas into a marginal region of the channel, the said gas being injected parallel to and at an inclination to the region of the interface formed by the metal and the slag so as to form an emulsion of metal drops which are drawn into said slag whereby to accelerate the metal to slag interaction and reduce the length of the channel required for such interaction.

3,861,906

CALCIUM DEOXIDIZED, FINE GRAIN STEELS

Vijayakumar A. Tipnis, Parma; James Harmon Doubrava, South Euclid, and Roger A. Joseph, Cleveland, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Dec. 29, 1972, Ser. No. 319,676

Int. Cl. C22c *37/10;* **C21c** *7/00*

U.S. Cl. 75—124 **8 Claims**

1. A calcium deoxidized steel comprising by weight from 0.13 to 0.70% carbon, from 0.45 to 1.65% manganese, from 0.015 to 0.10% aluminum, at least 0.0002% calcium, up to 0.09% sulfur, up to 3.5% nickel, up to 3.5% chromium, up to 0.35% vanadium, up to 0.80% molybdenum, and up to

0.0015% boron, said steel being characterized by calcium aluminate inclusions and by the absence of alumina inclusions.

3,861,907
WEAR RESISTANT LOW-ALLOY VALVE STEEL
Edward J. Dulis, Upper St. Clair Twp., Allegheny Co., and William Stasko, Munhall, both of Pa., assignors to Crucible Inc., Pittsburgh, Pa.
Filed Mar. 23, 1973, Ser. No. 344,313
Int. Cl. C22c *39/26*
U.S. Cl. 75—126 B **5 Claims**

1. An internal combustion engine valve made from an essentially nickel-free austenitic stainless steel consisting essentially of, in weight percent, 0.25 to 0.55 carbon, 0.05 to 0.45 nitrogen, with carbon plus nitrogen within the range of 0.65 to 0.95, 10 to 14 manganese, 0.50 to 1.5 silicon, 15 to 20 chromium, 1 max. aluminum, an effective amount up to 1.0 of at least one element selected from the group consisting of columbium, tantalum, titanium, zirconium and hafnium, 0.0008 to 0.005 boron and balance iron.

3,861,908
DUPLEX STAINLESS STEEL
Jerome P. Bressanelli, Scott Twp., Allegheny County, Pa., assignor to Crucible Inc., Pittsburgh, Pa.
Filed Aug. 20, 1973, Ser. No. 389,832
Int. Cl. C22c *39/14*
U.S. Cl. 75—126 B **3 Claims**

1. A duplex stainless steel having good hot workability, cold formability and corrosion resistance consisting essentially of, in weight percent, carbon 0.12 max., nitrogen 0.12 max., manganese 8 to 16, silicon 3 max., nickel 1.0 max., chromium 15 to 20, molybdenum 0.6 to 2.0, carbon plus nitrogen 0.06 to 0.14 and balance iron, with a chromium equivalent of 13.5 to 16.0 in accordance with the formulae:

Chromium Equivalent, in percent = % chromium + % silicon + % molybdenum − % nickel − **30** (% carbon + % nitrogen),

to provide said steel with substantially equal amounts of ferrite and austenite after annealing within the range of 1,850° to 2,050°F, whereby a combination of both good hot workability and cold formability is achieved.

3,861,909
HIGH STRENGTH STEEL ALLOY
Robert L. Caton, Sinking Spring, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.
Continuation-in-part of Ser. No. 36,219, May 11, 1970, abandoned. This application July 26, 1972, Ser. No. 275,355
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 B **8 Claims**

1. An age-hardenable stainless iron-base alloy which in its age-hardened condition is characterized by an ultimate tensile strength of about 225,000 psi or more with good ductility and which consists essentially in weight percent of about

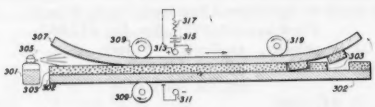
Carbon	0–0.1
Nitrogen	0–0.1
Manganese	0–2
Silicon	0–1
Phosphorus	0–0.05
Sulfur	0–0.05
Boron	0–0.02
Chromium	9–13
Cobalt	8–16
Molybdenum	4–8
Nickel	4–8

up to about 12.8% tungsten as a replacement for all or part of the molybdenum content in the ratio of about 1.2% to 1.6% tungsten to 1% molybdenum, the balance being essentially iron and incidental impurities, the elements nickel, chromium, molybdenum and cobalt being balanced to provide an austenite retention index (ARI) value of from about 18.0 to 22.8 as calculated from the equation

ARI = % Ni + 0.8(% Cr) + 0.6(% Mo) + 0.3(% Co)

and in calculating the austenite retention index all of the percent manganese multiplied by 0.5 is added when the manganese content is greater than 0.5%, all of the percent silicon multiplied by 1.5 is added when the silicon content is greater than 0.5%, when carbon is present in an amount greater than 0.01% the percent carbon is solid solution multiplied by 30 is added, and when nitrogen is present in an amount greater than 0.01% the percent nitrogen in solid solution multiplied by 30 is added.

3,861,910
MANIFOLD IMAGING PROCESS
Joseph Kropac, Williamson, and Paul Swanton, Webster, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Jan. 13, 1969, Ser. No. 790,730
Int. Cl. G03g *17/00, 13/00*
U.S. Cl. 96—1 M **10 Claims**



1. An imaging process which comprises subjecting an electrically photosensitive imaging layer comprising electrically photosensitive phthalocyanine particles dispersed in an electrically insulating binder material residing on an electrically insulating donor sheet to a first electrical field, exposing said layer to electromagnetic radiation to which the imaging layer is sensitive while under said electrical field, removing said electrical field from said layer subsequent to said exposure, rendering said layer structurally fracturable in response to the combined effects of said exposure and an electrical field by applying thereto an activating amount of an activator, subjecting the activated imaging layer to a second electrical field while said imaging layer is sandwiched between said donor sheet and a receiver sheet and separating the sandwich while under the second electrical field whereby the imaging layer fractures in imagewise configuration.

3,861,911
IMAGE FIXING METHOD
Ray H. Luebbe, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Sept. 28, 1972, Ser. No. 293,225
Int. Cl. G03g *7/00*
U.S. Cl. 96—1.4 **8 Claims**

1. A method of titling film comprising:
a. forming an image by means of the manifold imaging process;
b. transferring said image to said film;
c. providing an unpolymerized photopolymer residing on a substrate substantially transparent to actinic light for said photopolymer;

d. applying said photopolymer on said substrate to said image;
e. substantially uniformly exposing said photopolymer to actinic light through said substrate whereby said photopolymer substantially uniformly polymerizes; and
f. removing said substrate from said polymerized photopolymer.

3,861,912
PRESSURE SENSITIVE ELECTROPHOTOGRAPHIC REPRODUCTION SHEETS

Ghazi Zaki Ibrahim, North Reading, Mass., assignor to Dennison Manufacturing Company, Farmingham, Mass.

Filed Mar. 13, 1972, Ser. No. 234,413
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 **11 Claims**

1. A pressure sensitive electrophotographic reproduction sheet comprising an electrically conductive backing sheet, a photoconductive layer adhered to one side of said backing sheet, and a layer of electrically conductive pressure-sensitive adhesive containing from ½ to 20 percent by weight nitrocellulose adhered to the other side of said backing sheet, said adhesive layer being sufficiently pressure sensitive as to cause the electrophotographic reproduction sheet to adhere to a receiving surface when the adhesive layer is placed in contact with such surface and pressure is applied to the backing sheet.

3,861,913
ELECTROPHOTOGRAPHIC CHARGE GENERATION LAYER

Charles Chiou, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1972, Ser. No. 239,984
Int. Cl. G03g *5/02*
U.S. Cl. 96—1.5 **6 Claims**

1. An electrophotographic plate comprising a conductive substrate, a charge transport layer, and a charge generation layer consisting essentially of from 5 to 35 percent by weight tellurium and from 0.5 to 20 percent by weight arsenic, with the substantial balance being vitreous selenium.

3,861,914
PERMANENT HOLOGRAPHIC RECORDING MEDIUM

Robert Allen Gange, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,747
Int. Cl. G03g *5/10*
U.S. Cl. 96—1.5 **8 Claims**

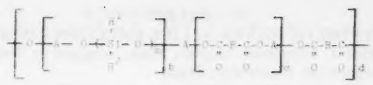
1. A medium for recording permanent phase holograms in the form of a surface relief pattern comprising in sequence an electrically conductive substrate, a photoconductive layer and an electrically alterable storage layer, wherein the storage layer comprises a room temperature vulcanizable silicone elastomer which cross-links upon application of a corona discharge to a thermoset condition.

3,861,915
BLOCK COPOLYESTERS OF POLYSILOXANES AS ADDITIVES TO PHOTOCONDUCTIVE LAYERS

John Duval Cawley, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1973, Ser. No. 346,373
Int. Cl. G03g *5/06, 5/08*
U.S. Cl. 96—1.5 **7 Claims**

1. A photoconductive composition comprising
a. a solvent-soluble block copolyester having a molecular weight of at least 10,000 and an inherent viscosity greater than 0.2 in chloroform, and having the formula:



wherein R is an alkylene radical containing from about 3 to about 20 carbon atoms, A is selected from the group consisting of alkylene radicals containing from about 2 to about 25 carbon atoms and arylene radicals containing from about 6 to about 25 carbon atoms derived from aromatic diols, R^1 is an alkyl radical containing from about 1 to about 10 carbon atoms and R^2 is selected from the group consisting of R^1, phenyl, naphthyl, anthracenyl and phenyl, naphthyl and anthracenyl substituted with alkyl containing from 1 to 10 carbon atoms wherein not more than one of R^1 and R^2 contain aromatic moieties, *b* is an integer of at least 1, *a* is an integer of at least 10, *c* is an integer of at least 2 and *d* is an integer of at least 2;
b. a binder compatible with said block copolyester; and
c. a photoconductor.

3,861,916
ELECTROPHOTOGRAPHIC MATERIAL, ELEMENT AND METHOD

Daniel R. Logue, San Gabriel, Calif., assignor to Bell & Howell Co., Chicago, Ill.

Filed Jan. 5, 1973, Ser. No. 321,432
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.8 **3 Claims**

1. An improved electrophotographic recording element capable of accepting electrostatic charges of either polarity, said element comprising a conductive base layer, and a layer of electrophotographic material disposed on said base layer and comprising a mixture of photoconductive zinc oxide, and red, hexagonal mercuric sulfide, the volume ratio of said zinc oxide to said mercuric sulfide being about 40:60, said mixture being dispersed in particulate from in an electrically insulating binder, said binder being in a weight ratio to said mixture of about 1:5 to about 1:10.

3,861,917
CONTINUOUS TONE LITHOGRAPHIC PLATE AND METHOD OF MAKING

Frank Magnotta, Laurel; Arthur D. Ketley, and Suzanne E. Matheson, both of Columbia, all of Md., assignors to W. R. Grace & Co., Columbia, Md.

Continuation-in-part of Ser. No. 228,277, Feb. 22, 1972, abandoned. This application Aug. 3, 1973, Ser. No. 385,261
Int. Cl. G03f *7/02;* **B23p** *1/20*
U.S. Cl. 96—33 **6 Claims**

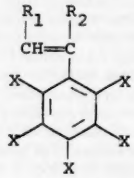
1. The process of forming a sealed, anodized surface on an aluminum or aluminum alloy sheet capable of printing a continuous tone lithographic print consisting of the steps of
a. electrochemically graining the surface of the sheet at a temperature in the range between 15° and 36°C using line AC current and a voltage between 8.5 and 12 volts in a bath consisting of 0.1 to 1.0 Baume HCl with a spacing between the aluminum sheets of 1–3 inches to obtain a depth variation of 1–15 microns;
b. anodizing the grained sheet in a 5–30% aqueous solution of sulphuric acid as the electrolyte at a current density in the range 8–55 amperes/ft.^{2} at a temperature in the range 10°–40°C for a period ranging from 1–10 minutes; and
c. sealing the anodized sheet in boiling deionized water until it has an electrical impedance in the range 6–12 kiloohms.

3,861,918
SYNTHETIC SILVER HALIDE EMULSION BINDER

Maurice J. Fitzgerald, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 9, 1973, Ser. No. 339,825
Int. Cl. G03c 1/04
U.S. Cl. 96—114 21 Claims

1. A photosensitive silver halide emulsion wherein the emulsion binder consists essentially of a water-soluble film-forming copolymer consisting of repeating units of a first monomer of the formula:



wherein R_1 is hydrogen, a lower alkyl group or a halogen; R_2 is hydrogen, a lower alkyl group, halogen or cyano group; and at least one X is a halogen with each remaining X being hydrogen or halogen; and repeating units of an acrylamide monomer.

3,861,919
A PHOTOCONDUCTOR PROCESS USING A COPY MEDIUM SENSITIZED WITH AN AMINE

Samuel H. Stein, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Continuation-in-part of Ser. No. 24,037, March 30, 1970, abandoned. This application May 9, 1972, Ser. No. 251,671
Int. Cl. G03c 5/24
U.S. Cl. 96—48 7 Claims

1. In a process for recording an image pattern of activating radiation comprising exposing a copy medium comprising a photosensitive titanium dioxide which becomes activated upon exposure to activating radiation and thereby capable of causing reduction of silver ion at exposed portions of said medium upon contact with a solution of silver ions and contacting said medium with image-forming material comprising a solution of silver ions, the improvement comprising contacting the copy medium with an amine compound incapable of alone acting as a photographic developer for selectively reducing silver ion to silver metal in exposed portions of a copy medium comprising photosensitive titanium dioxide which has been exposed and contacted with a solution of silver ions in a sufficient amount to increase the photographic speed of the copy medium in the process, but not in sufficient amount to cause excessive fogging in such process and wherein the amine is at least one member selected from the following groups:

a. $H_2N - CH_2 - Z - CH_2X$ wherein Z is an alkane or an alkene moiety, said alkane or alkene moiety having 2 to 18 carbon atoms and wherein X is $-NR_2$, $-CO_2R$, $-OR$, or $-H$ wherein R is H or an alkyl group having 1 to 10 carbon atoms;

b. $H_2N - Z - Y$ wherein Z is as defined above; Y is $-NH - CH_2 - Z - CH_2X$; and wherein X is as defined above;

c. $H_2N-(CH_2)_n-Q-(CH_2)_m-X$ wherein X is as defined above; Q is an aromatic hydrocarbon and n and m are integers from 0 to 8; and

d. $R_1N-(CH_2A)_2$ wherein A is $-CO_2R$ or $-CH_2OR$ and wherein R_1 is $-CH_2A$ or $-(CH_2)_p-N-(CH_2A)_2$ wherein p is an integer from 2 to 4 and R is as defined above.

3,861,920
SUPER-SENSITIZING DYE COMBINATION IN SILVER HALIDE EMULSIONS

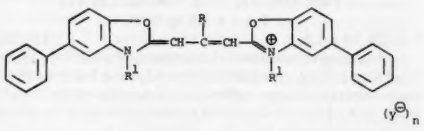
Alan L. Borror, Lexington; Ruth Linda Hill, Cambridge, and Jerome L. Reid, Wayland, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1974, Ser. No. 430,223
Int. Cl. G03c 1/40, 1/14
U.S. Cl. 96—77 11 Claims

1. A photosensitive silver halide emulsion spectrally sensitized with a dye combination comprising:

a symmetrical benzoxazolocarbocyanine dye of the formula:

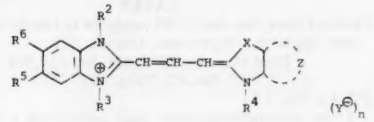
I.



wherein R represents hydrogen or a lower alkyl group possessing from 1 to 3 carbon atoms, inclusive; and each R^1 represents a carboxyalkyl or sulfoalkyl group possessing from 1 to 4 carbon atoms, inclusive, in the alkylene chain; Y represents an anion; and n represents 0 or 1, with n=0 in the inner salt form of the dye; and

an unsymmetrical benzimidazolocarbocyanine dye of the formula:

II.



wherein Y and n possess the same meaning as in Formula I; X is S or Se; R^2 is a lower alkyl group possessing from 1 to 3 carbon atoms inclusive; R^3 and R^4 are the same or different and represent a carboxyalkyl or sulfoalkyl group, each possessing from 1 to 4 carbon atoms, inclusive, in the alkylene chain, or a lower alkyl group, with at least one of R^3 and R^4 being said carboxyalkyl or sulfoalkyl group; R^5 is halogen, cyano, or lower carboxyalkyl; R^6 is hydrogen or halogen; and Z represents the non-metallic atoms necessary to complete a benzothiazole or benzoselenazole nucleus.

3,861,921
SUBBING LAYERS COMPRISING POLYAMIDE AND PHENOLIC RESIN FOR METAL BASES OF PHOTOPOLYMERIZABLE ELEMENTS

Horst Hoffmann, 4 Neuwiesenstrasse; Christian Srna, 6 Ungsteiner Strasse, both of 6700 Ludwigshafen; Guenther Sabelus, 25 Neustadter Strasse, 6715 Lambsheim; Georg Falkenstein, 22 Im Kaestenbush, 6730 Neustadt, and Udo Strauss, 3 Haydnstrasse, 6900 Heidelberg, all of Germany

Filed Jan. 12, 1973, Ser. No. 323,135
Int. Cl. G03c 1/94, 5/00, 1/68; B41n 1/18
U.S. Cl. 96—86 P 11 Claims

1. A laminate suitable for the production of printing plates and consisting essentially of

a. a metal base,

b. a thin intermediate layer of a crosslinked polymer,

c. a thin layer which is solid at room temperature and consists essentially of a photopolymerizable intimate mixture of

c1. 50 to 90 % by weight of a synthetic polyamide which is solid at room temperature and soluble in an organic

solvent and contains recurring amide groups in the main chain of the molecule,

c2. 10 to 50 % by weight of at least one monomeric compound containing at least two photopolymerizable ethylenically unsaturated double bonds or of a mixture of at least one such compound with not more than about 30 % by weight, based on the total amount of monomers, of at least one monomeric compound having only one photopolymerizable ethylenically unsaturated double bond, the monomers not boiling at a temperature below 100°C at atmospheric pressure, and

c3. an effective amount of a photo-initiator, and

d. an optional thin light-transmitting protective cover sheet, wherein said intermediate layer (b) is a layer which has been cured by heating to a temperature of from 80° to 300°C and is based on an intimate mixture of (b) 50 to 98% by weight of a synthetic polyamide which is solid at room temperature, contains recurring amide groups in the main chain of the molecule and is substantially compatible with the polyamide of layer (c), and (b2) 2 to 50% by weight of a curable phenolic resin having a molecular weight of less than 10,000 or a mixture of such a phenolic resin with an amount of a curable amino or epoxy resin having a molecular weight of less than 1,000 which is smaller than the amount of phenolic resin.

3,861,922

PROCESS FOR THE MANUFACTURE OF SILVER HALIDE PHOTOSENSITIVE MATERIALS

Minoru Minoda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 27, 1972, Ser. No. 318,969
Claims priority, application Japan, Dec. 27, 1971, 46-3422
Int. Cl. G03c *1/78*
U.S. Cl. 96—87 R **8 Claims**

1. A process for the manufacture of silver halide photosensitive materials wherein one or more hydrophilic colloid layers are coated on a support, at least one hydrophilic colloid layer comprising a silver halide in a hydrophilic colloid, and the layer or layers are dried, the improvement wherein the moisture content is reduced to about 300% or less by non-microwave drying and the moisture present at a moisture content of about 300% or less in the hydrophilic layer or layers is removed by microwave heating under air of a relative humidity of 55 to 85%, moisture content being calculated by the formula:

moisture content = (weight of moisture in layer or layers which contain hydrophilic colloid on the support being dried/dry weight of solids in such layer or layers being dried) × 100,

the weight of silver halide contained in the silver halide emulsion being more than 0.6 parts per part of hydrophilic colloid.

3,861,923

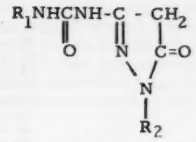
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS CONTAINING A 3-UREIDO-5-PYRAZOLONE COUPLER AND AN ALDEHYDE COMPOUND

Hiroshi Hara; Yukio Yokota; Hiroyuki Amano, and Tokio Nishimura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 31, 1973, Ser. No. 365,678
Claims priority, application Japan, May 31, 1972, 47-54500
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **21 Claims**

1. A color photographic material which provides magenta dye images of excellent heat and moisture resistance and reduced magenta development for comprising a support having thereon a silver halide photographic emulsion layer containing a 3-ureido-5-pyrazolone magenta coupler and a compound having an aldehyde group bonded to a carbon atom;

wherein said magenta coupler is a compound represented by the formula



wherein R_1 represents an alkyl group or an aryl group and R_2 represents a phenyl group; and

wherein said aldehyde group is bonded to the carbon atom of an alkyl group, an aryl group or a furfural group, wherein said alkyl group contains from 2–20 carbon atoms and said aromatic group is a formylsubstituted phenyl or naphthyl ring.

3,861,924

IMPROVEMENT IN VISCOSITY OF GELATIN SOLUTIONS FOR PHOTOSENSITIVE MATERIALS

E. Scudder Mackey, and Michael Dervay, both of Binghamton, N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,244
Int. Cl. G03c *1/72*
U.S. Cl. 96—114 **10 Claims**

1. In a composition for use as a coating in an improved photosensitive element, said composition containing gelatin and a hydrophilic polymer flocculating agent bearing a carboxyl or sulfonic acid group dispersed in an aqueous medium, the improvement comprising:

the employment of an inorganic fluoride salt viscosity builder selected from the group consisting of alkali metal and ammonium fluorides, bifluorides and silico fluorides.

3,861,925

ALKALI-RESISTANT, ZIRCONIA-FREE, FIBERIZABLE GLASS COMPOSITIONS

Warren W. Wolf, Reynoldsburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Feb. 12, 1973, Ser. No. 331,725
Int. Cl. C03c *13/00*
U.S. Cl. 106—50 **4 Claims**

1. Fiberizable, alkali-resistant, zirconia free, glass compositions consisting essentially of:

	Mole Percent
SiO_2	65 to 70
X	4 to 12
CaO	4 to 8
Na_2O	14 to 20
K_2O	0 to 3

wherein X is TiO_2, La_2O_3 or CeO_2 and wherein said compositions have a liquidus temperature of less than 2,200°F and a viscosity of $10^{2.50}$ poises at 2,450°F or less and 10^{3} poises at 2,220°F or less.

3,861,926

GLASS FIBER COMPOSITIONS OF R_2O-$ROZrO_2$-SiO_2

Phillip Sidney Irlam, Southport, and Brian Yale, Upholland, near Wigan, both of England, assignors to Pilkington Brothers Limited, Lancashire, England

Continuation-in-part of Ser. No. 58,643, July 27, 1970, abandoned. This application Nov. 10, 1972, Ser. No. 305,395
Claims priority, application Great Britain, July 28, 1969, 37862/69
Int. Cl. C03c *13/00*
U.S. Cl. 106—50 **4 Claims**

1. Glass fibres of the continuous type which are to be incorporated as reinforcement in cementitious products, and having a composition consisting essentially of, in molecular weight percentages:

SiO_2	62% to 75%
ZrO_2	7% to 11%
R_2O	13% to 21%
R'O	1% to 10%
Al_2O_3	0% to 4%
B_2O_3	0% to 6%
Fe_2O_3	0% to 5%
CaF_2	0% to 2%
TiO_2	0% to 4%

wherein R_2O represents Na_2O and up to 2 mol % Li_2O, and R'O is an oxide selected from the group consisting of the alkaline earth metal oxides, zinc oxide (ZnO) and manganous oxide (MnO), and wherein the maximum value of the molecular weight percentage represented by $SiO_2 + ZrO_2 + AlO_{1.5}$ is on a sliding scale dependent on the content of ZrO_2, ranging in the absence of Li_2O and CaF_2 between 78.5% when ZrO_2 is 11% and 81% when ZrO_2 is 7%, and being increased over the whole scale by 1.5% when 2% Li_2O is present and being further increased over the whole scale by 2% when 2% CaF_2 is present, the composition also being such that the liquidus temperature T_L is more than 40°C below the temperature T_W at which the glass viscosity is 1,000 poises, T_W being not higher than 1,320°C.

3,861,927

ALKALI RESISTANT GLASS FIBERS

Isao Kimura, and Takuji Yoshimura, both of Osaka, Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed May 4, 1973, Ser. No. 357,461

Claims priority, application Japan, May 12, 1972, 47-47535; Sept. 8, 1972, 47-90779

Int. Cl. C03c *3/08, 13/00*

U.S. Cl. 106—50 1 Claim

1. Alkali resistant glass fiber having an alkali solubility of not more than 5 percent and a strength retaining percentage of not less than 90 percent, which consists of

SiO_2	60–67	mol%
ZrO_2	12–16	mol%
R_2O	16–20	mol%
[R'O] CaO	1–3	mol%
B_2O_3	2–6	mol%
P_2O_5	1–3	mol%
SnO_2	0.5–6	mol%
CaF_2	0.5–2	mol%

wherein R_2O is Na_2O or a mixture of Na_2O and Li_2O and the sum of P_2O_5 and B_2O_3 is 4–8 mol percent.

3,861,928

HYDRAULIC CEMENT AND METHOD OF PRODUCING SAME

Thomas C. Slater, deceased, late of Sutter Creek, Calif. (Vivian Slater, Executrix, Sutter Creek, Calif.), and Floyd C Hamilton, Jr., Louisville, Ky., assignors to The Flintkote Company, White Plains, N.Y.

Continuation-in-part of Ser. No. 85,776, Oct. 30, 1970, Pat. No. 3,682,669, which is a continuation-in-part of Ser. No. 70,596, Sept. 8, 1970, abandoned, which is a continuation of Ser. No. 652,275, July 10, 1967, abandoned. This application Aug. 4, 1972, Ser. No. 277,969

Int. Cl. C04b *7/00, 7/02*

U.S. Cl. 106—89 32 Claims

1. A hydraulic cement composition containing alpha-prime dicalcium silicate as a hydraulically settable calcium silicate in an amount by weight of about 65 percent to about 85 percent of said composition.

3,861,929

EXPANSIVE CEMENT AND ITS METHOD OF MANUFACTURE

John L. Deets, Griffith, Calument Township, and Zvonimir T. Jugovic, Munster, North Township, both of Ind., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 172,691, Aug. 18, 1971, abandoned. This application Oct. 27, 1972, Ser. No. 301,382

Int. Cl. C04b *7/02, 7/04*

U.S. Cl. 106—89 40 Claims

1. The method of controlling the degree of expansion of an expansive cement comprising adding a quantity of calcium sulfate to a mixture consisting essentially of Portland and calcium aluminate cements or clinkers, said calcium aluminate cement being present in an amount from about 2 to 17 weight percent of the Portland cement, to provide an excess of SO_3 over the optimum SO_3 of about 2 to 24 weight percent of the Portland cement, said optimum being determined in accordance with ASTM Standard C563–70 with said excess of SO_3 being sufficient to give a cement having the desired expansion level.

3,861,930

CONSTRUCTION MATERIALS

Ping-Wha Lin, Angola, Ind.

Continuation-in-part of Ser. No. 36,861, May 13, 1970, abandoned. This application Apr. 10, 1972, Ser. No. 242,699

Int. Cl. C04b *11/00*

U.S. Cl. 106—109 11 Claims

1. A process for producing improved materials of construction comprising the steps of forming a fluidized bed of calcium oxide, passing a substantially continuous flow of sulfur trioxide containing gasses through said fluidized bed while maintaining a substantially constant temperature above 650°F. and below the disintegration temperature of the $CaSO_4$, to develop a coating of calcium sulfate on cores of substantially unreacted calcium oxide, continuously withdrawing calcium sulfate coated calcium oxide particles, and rapidly quenching such particles to form a plurality of thermal shock induced cracks throughout the surfaces of the calcium sulfate particles.

3,861,931

OPAQUE CELLOPHANE FOR IMPROVED KEEPING

John S. Taylor, Newark, Del., assignor to FMC Corporation, Philadelphia, Pa.

Filed July 20, 1972, Ser. No. 273,449

Int. Cl. C08b *21/20*; G02b *1/00*

U.S. Cl. 106—165 7 Claims

1. A regenerated cellulose film for use in wrapping of oil-containing food products, said film having incorporated therein pigments of from about 8 to 15 percent of titanium dioxide and from about 0.25 to 2 percent of carbon black, based on the weight of cellulose and pigments, said titanium dioxide pigment being present as particles having an average size of not less than about 0.2 microns, the combination of titanium dioxide and carbon black together reducing the transmission of visible light through such film by at least 80 percent.

7. A process which comprises separately and uniformly dispersing in water finely comminuted particles of titanium dioxide, having an average size of not less than about 0.2 microns, and carbon black, mixing the two dispersions, and injecting the mixture into a viscose solution immediately prior to its passage through a film extrusion nozzle and into an acid regenerating bath to produce an opaque regenerated cellulose film, said separate dispersions of titanium dioxide and carbon black being mixed in such concentrations as to have incorporated in the resulting opaque regenerated cellulose film from about 8 to 15 percent titanium dioxide particles and from about 0.25 to 2.0 percent carbon black particles, based upon the weight of the cellulose and particles.

3,861,932
STABILIZATION OF NITROCELLULOSE

Bernard L. Kabacoff, Norwalk, Conn., and George Mohr, Eastchester, N.Y., and Charles M. Fairchild, Old Greenwich, Conn., assignors to Revlon, Inc., New York, N.Y.

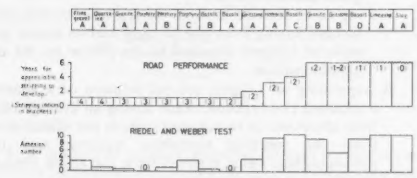
Filed Dec. 13, 1973, Ser. No. 424,576
Int. Cl. C08b *21/12, 27/42*
U.S. Cl. 106—187 5 Claims

1. A process for preventing the discoloration of nitrocellulose in solutions thereof which comprises adding to said solutions from about 5 to 80 parts by weight of dibenzoylmethane per 1,500 parts by weight of nitrocellulose.

3,861,933
ASPHALT HAVING HIGH ADHESION STRENGTH AND ITS PREPARATION

Tadashi Doi, Osaka, Japan, assignor to Kao Soap Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1973, Ser. No. 338,412
Claims priority, application Japan, Mar. 9, 1972, 47-24145
Int. Cl. C08h *13/00, 17/44*
U.S. Cl. 106—273 N 3 Claims



1. An aspahlt composition having a high adhesion strength, comprising road-paving asphalt having mixed therein from 0.3 to 2% by weight, based on the amount of asphalt, of an aminoalkyl polyalkoxysilane having the formula:

$$[H - (NHR)_n - Si(OR')_3]$$
$$H\text{—}(N - R\text{—})_n Si(OR')_3$$
$$\quad\quad |$$
$$\quad\quad H$$

wherein R is alkylene having two or three carbon atoms, R' is alkyl having one or two carbon atoms and *n* is an integer of 1 to 2.

3,861,934
METHOD FOR IMPROVING THE BRIGHTNESS OF KAOLIN CLAY

Miller B. Mallary, and Joseph L. Hunter, both of Macon, Ga., assignors to Engelhard Minerals & Chemicals Corporation, Township of Woodbridge, N.J.

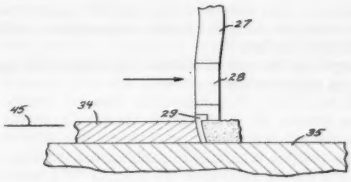
Filed June 13, 1972, Ser. No. 262,265
Int. Cl. C08h *17/06*
U.S. Cl. 106—288 B 4 Claims

1. In a method for producing a kaolin clay pigment having a brightness of at least 90 percent which comprises the steps of forming a fluid aqueous slip of impure kaolin clay containing finely divided colored particles of a titaniferous impurity, said impure clay having been obtained from a sedimentary soft kaolin clay which is brightened significantly by bleaching with zinc hydrosulfite solution but is not brightened significantly by treatment with ozone or other strong colorless oxidants, without adding a froth producing reagent, conditioning said slip by means of a rotating impeller with reagents consisting essentially of an anionic collector capable of selectively coating the particles of titaniferous impurity, maintaining said conditioned slip quiescent until coated particles of titaniferous impurity rise and float on the surface of the slip of clay, removing the floated particles from the slip, thereby obtaining a partially brightened slip of unbleached purified clay, and bleaching the slip of purified clay with a reducing bleach; the improvement which comprises: using an anionic collector in amount within the range of about 1.5 to 3.0 lbs./ton of clay, conditioning the slip for less than 30 minutes with an energy input less than 75 hp. hr./ton, and oxidizing the slip of purified clay with an oxidizing agent which does not leave permanently colored residues in the slip before bleaching it with a reducing bleach.

3,861,935
SYNTHETIC CRYSTALLINE BETA-WALLASTONITE PRODUCT

Walter Ohnemuller, 509 Leverkusen, am Barsberg 17, Leverkusen, and Alexander Solf, 506 Bensberg Refrath Uurfet 106, Bensberg-Refrath, both of Germany

Filed Mar. 10, 1970, Ser. No. 18,342
Claims priority, application Germany, Mar. 12, 1969, 1912354
Int. Cl. C01b *33/24*; C09c *1/28*
U.S. Cl. 106—306 1 Claim



1. The pure, synthetic, crystalline beta wollastonite having a BET specific surface area of 3 to 100 sq. m./g. and a crystal particle size of 0.01 to 2 milli-microns, which is the product made in accordance with the process which comprises subjecting an aqueous suspension of calcium oxide hydrate and a source of SiO_2 in a molar ratio of SiO_2:CaO of about 0.7 to about 1.3 to hydrothermal treatment in the range of about 100°C. to about 500°C. to produce calcium silicate hydrates having a SiO_2/CaO molar ratio of about 0.7 to about 1.3 and annealing the calcium silicate hydrates at about 800°C. to about 1150°C. to dehydrate the same to the substantially pure, crystalline beta wollastonite.

3,861,936
EXTRUDABLE PLASTE TOOLING METHOD

Lloyd E. Winter, Los Angeles, Calif., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 28, 1971, Ser. No. 166,825
Int. Cl. B44c *1/20*
U.S. Cl. 117—8 2 Claims

1. In a method for producing a master tooling model having a true net loft line surface useful as a reference for the production of other similarly configured structures, the steps which include:

a. constructing a rough undersized master tooling model substructure base, said base having a surface below the true net loft line of the master tooling model being produced;
b. extruding a thick viscous layer of carvable curable resin at a uniform thickness upon said base to a point above the true net loft line of the master tooling model being produced;
c. curing the extruded layer of carvable resin; and
d. machining the surface of the cured carvable resin layer down to the true net loft line to form the master tooling model.

3,861,937

METHOD OF PRODUCING SUEDE-LIKE SYNTHETIC LEATHERS

George Hanneken, Willingboro, and Christian Wirth, Mount Holly, both of N.J., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed July 3, 1972, Ser. No. 268,290
Int. Cl. B44c *1/00, 1/22*
U.S. Cl. 117—10 10 Claims

1. A method for producing synthetic suede-like leather consisting of the following steps:

1. applying a curable elastomeric coating composition consisting of (a) a curable elastomeric composition and a cross-linking agent dissolved in solvent or (b) a liquid curable mixture comprising a polyurethane prepolymer, a polyester polyol and a hydroxy reactive compound onto a temporary paper or metal web carrier which is wet by the elastomer to form a coating layer of said composition;
2. laminating a napped fabric substrate to the resulting coated layer to form a composite article;
3. heating said composite article in an oven to dry and partially cure said coating;
4. peeling said substrate from said temporary carrier whereby a layer of said coating composition remains on said carrier and whereby a layer of said coating composition having a suede-like leather appearance remains on said substrate, and
5. completing the cure of said coating composition remaining on said substrate.

3,861,938

PROTECTIVE COATING FOR METALS

Raymond Pennoyer Jackson, Suffern, N.Y., assignor to The International Nickel Company Inc., New York, N.Y.

Continuation-in-part of Ser. No. 234,311, March 13, 1972,. This application Nov. 20, 1972, Ser. No. 307,862
Int. Cl. C23c *3/00*
U.S. Cl. 117—31 30 Claims

1. A protective coating impervious to gas at high temperatures of about 500°C. to about 1300°C. on metal having a melting point above about 1000°C. and subject to be exposed to said high temperatures below said melting point comprising a thin continuous layer overlying said metal of chromic oxide formed in situ by oxidation of metallic chromium in the presence of the dried residue of colloidally dispersed alkali stabilized sol form silica, said alkali stabilized silica sol having a mole ratio of silica to alkali metal oxide of about 4 to 1 to 400 to 1, said layer being directly bonded to said underlying metal, and said layer comprising an essentially impervious barrier to gases at said high temperatures.

13. A process for protecting the surface of metal melting above about 1000°C. from the deleterious effects of reaction with gases in contact therewith comprising oxidizing metallic chromium on the surface of said metal at a temperature of at least about 800°C. while said metallic chromium is in intimate association with a mixture of silica and alkali metal oxide with the mole ratio of silica to alkali metal oxide being about 4 to 1 to about 400 to 1 to provide an essentially continuous, gas impermeable film comprising said silica, said alkali metal oxide and the product of the oxidation of said metallic chromium directly bonded to said metal surface.

23. A slurry composition comprising particulate chromium dispersed in a liquid vehicle containing a film-forming alkali-metal stabilized silica sol, said chromium being in the form of substantially equiaxed particles having an average particle dimension of about 0.001 to about 25 microns and said silica sol having a mole ratio of silica to alkali metal oxide within the range of about 4 to 1 to about 400 to 1.

3,861,939

PROCESS FOR COATING SUBSTRATES USING FAST CURING SILANOL-CONTAINING ORGANOPOLYSILOXANE RESINS

Duane F. Merrill, Ballston Spa, and Philip J. Lavan, Schenectady, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 211,047, Dec. 22, 1971, Pat. No. 3,786,015. This application Jan. 5, 1973, Ser. No. 321,534
Int. Cl. B32b *15/08*; C09d *3/82*
U.S. Cl. 117—132 BS 5 Claims

1. A process of coating a substrate which comprises:

I. applying the fast curing silicone-containing resin composition prepared by a process comprising in combination the steps of

A. agitating a mixture of
1. organohalosilane
2. from about 1.7 parts to about 10 parts by weight of water, per part of organohalosilane,
3. from about 0.2 to about 5 parts by weight of acetone, per part of organohalosilane,
4. from about 0.3 part to about 5 parts by weight of a water immiscible organic solvent, per part of organohalosilane, and
5. up to about one mole of an aliphatic monohydric alcohol having from one to eight carbon atoms, per mole of halogen attached to the silicon on the organohalosilane,

B. separating an organic solvent solution of a silanol-containing polyorganosiloxane having an average ratio from about one to two organo radicals per silicon atom from the resulting hydrolysis mixture, said organohalosilane being selected from the group consisting of
a. organotrihalosilane,
b. a mixture of organotrihalosilane and diorganodihalosilane,
c. a reaction product of an aliphatic monohydric alcohol having from one to eight carbon atoms and a member selected from the group consisting of organotrihalosilane, and a mixture of organotrihalosilane and diorganodihalosilanes; which reaction product has an average ratio of up to one alkoxy radical per halogen radical,
d. a mixture of the reaction product of (c) and a member selected from the organotrihalosilane and diorganodihalosilane,

and where the organo radicals of the organohalosilane and the silanol-containing polyorganosiloxane are attached to silicon by carbon silicon linkages and are selected from the group consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals, and cyanoalkyl radicals;

C. adding an initial portion of a carboxylic acid salt of a metal ranging from lead to manganese inclusive in the electromotive series of metals in an amount sufficient to provide from about 0.001% to about 0.1% by weight of metal based upon the weight of said organopolysiloxane and to provide at least the minimum amount of metal required to provide a through cure of said polysiloxane at a preselected curing temperature for a preselected cure time, and whereby said salt in soluble in said polysiloxane;

D. contacting said carboxylic acid salt and said polyorganosiloxane for a time at least sufficient to achieve an equilibrium whereby a through cure of said polyorganosiloxane at said preselected cure temperature and preselected cure time is achievable;

E. then adding a subsequent portion of a carboxylic acid salt of a metal ranging from lead to manganese inclusive in the electromotive series of metals in an amount of about 0.09% to about 0.36% by weight of metal based on the weight of the polyorganosiloxane sufficient to provide at least about one-half of the amount of metal of said minimum amount of metal required to

provide said through cure, whereby said carboxylic acid salt is soluble in said polyorganosiloxane; and

F. then admixing the carboxylic acid salt and the polyorganosiloxane; and

II. then curing said composition.

3,861,940

METHOD FOR ELECTROSTATIC PRINTING, PRODUCTS PRODUCED THEREBY, AND USE OF THESE PRODUCTS

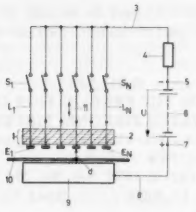
Gabor Forgo; Erwin Meyer, and Karl Moser, all of Zurich, Switzerland, assignors to Zellweger AG, Uster, Switzerland

Filed July 14, 1972, Ser. No. 272,047

Claims priority, application Switzerland, Aug. 16, 1971, 12103/71

Int. Cl. G03g *13/08, 13/22, 15/08, 15/22*

U.S. Cl. 117—17.5 **28 Claims**



1. A method of producing printed images by electrostatic printing techniques, comprising the steps of producing a latent electrostatic charge image on a carrier, and during at least a portion of the time when the latent electrostatic charge image is produced carrying out a change in the spacing between an electrode arrangement which is responsible for the structure of the electrostatic charge image and the carrier for the reception of the latent electrostatic charge image, said change in spacing causing partial discharges for the formation of the electrostatic charge image to travel through different paths across the space between the electrode arrangement and the carrier to provide a substantially uniform potential distribution within the confines of the electrostatic charge image to be produced, so as to bring about a substantially uniform covering of toner particles over the surface of the electrostatic charge image to thereby improve the quality of the electrostatically printed image, contacting the electrostatic charge image with toner particles, and fixing the toner particles to the carrier.

3,861,941

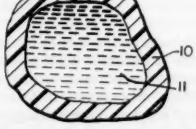
PRESSURE-SENSITIVE RECORD SHEET

Bruce W. Brockett, 2829 Hemphill Rd., Dayton, Ohio 45440

Filed July 2, 1971, Ser. No. 159,312

Int. Cl. B41n *5/16*

U.S. Cl. 117—36.2 **3 Claims**



1. A pressure-sensitive record sheet material comprising a substrate web having bound on a surface a random dispersion of liquid-droplet-containing pressure-rupturable microcapsules having hydrophilic, organic, polymeric-film wall material and core material consisting essentially of: a water-immiscible oil which is capable of dissolving about one to ten percent by weight of water; water; and a water-soluble color-forming reactant material, all mutually dissolved to yield a core material of a single phase solution.

3,861,942

PROCESS FOR MAKING FLAT PHOTOGRAPHIC FILM PRODUCT

Claude Guestaux, Vincennes, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 7, 1972, Ser. No. 287,131

Claims priority, application France, Oct. 13, 1971, 71.36705

Int. Cl. B44d *1/092*

U.S. Cl. 117—34 **12 Claims**

1. A method for making a substantially flat photographic film product having a polyester or polycarbonate support coated on one surface with at least one layer including photosensitive material and a hydrophilic binder for said material, said method consisting essentially of

a. first treating one surface of said support before applying said layer by (i) applying to said surface a treating composition consisting essentially of a solution of a volatile hydroxy aromatic compound in an organic or aqueous solvent for said compound, said compound having a volatilization point above that of the solvent and being volatile at a temperature above about the second order transition temperature (Tg) of said polymer and below about 175° C., and (ii) subjecting the treated support from (i) to a temperature in the temperature range of from said second order transition temperature (Tg) to below about 175° C. for a period of time sufficient to evaporate substantially all of said solvent and said compound and to impart internal tensions and incurvature to the treated surface,

b. then applying to the other surface of said support a coating comprising at least one layer of coating composition including photographic material and a hydrophilic binder for said material, said coating being of sufficient thickness to provide, when dry, compensating incurvature forces on the coated surface sufficient to counteract the internal tensions of incurvature of said first treated surface, and

c. drying the coating.

3,861,943

MARKING METHOD

Norman Grainger, London, England, assignor to R. P. Scherer Limited, Slough, Buckinghamshire, England

Division of Ser. No. 816,380, April 15, 1969, abandoned. This application Jan. 27, 1972, Ser. No. 221,396

Claims priority, application Great Britain, Apr. 25, 1968, 19688/68

Int. Cl. B41m *5/00*

U.S. Cl. 117—37 R **16 Claims**

1. A method of marking an object which comprises projecting a marking projectile comprising a soft gelatine capsule; said gelatine containing not more than 30% by weight of a plasticizer based on the total weight of plasticizer and gelatine; said capsule having a wall thickness of from 0.02 to 0.03 inch and a diameter of 0.25 to 0.75 inch; said capsule containing from 0.25 to 1.25 cc's of an adherent marking fluid of a type compatible with said gelatine capsule; from a gun of the compressed gas type, said projectile rupturing only on impact with the object to thereby mark it with the marking fluid contained in the capsule.

3,861,944
METHOD OF MAKING CORROSION RESISTANT CONCRETE ARTICLES

Meyer Steinberg, Huntington Station; Lawrence E. Kukacka, Port Jefferson, and Anthony J. Romano, Kings Park, all of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 6, 1972, Ser. No. 303,753
Int. Cl. B44d *1/16;* **F16l** *9/14*
U.S. Cl. 117—72 **4 Claims**

1. A method of producing concrete bodies having increased compressive and tensile strengths, decreased water permeability, and increased resistance to corrosion comprising:

a. impregnating a preformed concrete body by completely dispersing therein a liquid monomer mixture of about 90 percent wt. sytrene-10 percent wt. polyester;

b. polymerizing said monomer mixture in situ;

c. coating at least some of the exposed surfaces of said concrete body with a liquid monomer mixture of about 65 percent wt. polyester-35 percent wt. styrene and polymerizing the coated liquid monomer mixture in situ; and

d. coating said surfaces a second time with the aforesaid liquid monomer mixture followed by polymerization in situ.

3,861,945
PHOTOPOLYMERIZATION OF PIGMENTED ACTINIC LIGHT-SENSITIVE COMPOSITIONS

Rowland S. Hartzell, Gibsonia, and Ernest A. Hahn, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 20, 1971, Ser. No. 135,798
Int. Cl. B44d *1/50;* **C08f** *3/42, 11/02*
U.S. Cl. 117—93.31 **10 Claims**

1. The method of curing an actinic light-sensitive composition containing

a. an actinic light-sensitive resin,

b. pigments having at least 15 percent reflectance to actinic light having a wavelength somewhere between 2,200 and 3,800 Angstroms, at least a portion of said pigment being a white pigment selected from the group consisting of antimony trioxide, lithopone and lead carbonate, and

c. from about 0.1 to about 5 percent by weight of photosensitizer

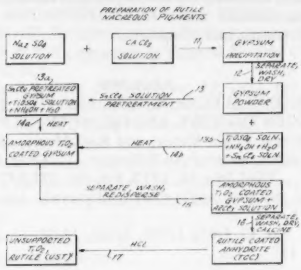
wherein the pigment to binder ratio is in the range of from 0.5:1 to 5:1, comprising subjecting said composition to actinic light in the wavelength range of from 2,200 to 3,800 Angstroms to cure said composition.

3,861,946
TITANIUM DIOXIDE NACREOUS PIGMENTS AND PROCESS FOR THE PREPARATION THEREOF

George R. Waitkins, Croton-on-Hudson; Carmine V. Deluca, Jr., Peekskill; Harold A. Miller, White Plains, and Forrest S. Wilcox, Yorktown Heights, all of N.Y., assignors to The Mearl Corporation, Ossining, N.Y.

Filed July 21, 1972, Ser. No. 273,747
Int. Cl. B44d *1/02;* **C09k** *1/60*
U.S. Cl. 117—100 B **12 Claims**

1. A nacreous pigment, comprising from 30 to 85% by weight of plate-like anhydrite particles having lengths of from 5 to 70 microns and thicknesses of from 0.1 to 1.0 microns, and crystalline titanium dioxide coatings thereon having thicknesses of from 5 to 500 nm, said coatings containing tin, tin and aluminum, or silicon additives in oxide form; said additive being present in the amount of up to about 0.25 part alumi-



num trioxide, up to 0.15 part tin dioxide, or up to 0.17 part silicon dioxide per part of titanium dioxide.

3,861,947
PROCESS FOR THE PREPARATION OF ZIRCON COATED ZIRCONIA FIBERS

Bernard H. Hamling, Warwick, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,768
Int. Cl. B32b *15/02;* **B44d** *5/12*
U.S. Cl. 117—118 **8 Claims**

1. A process for the preparation of zircon-coated zirconia fibers and fibrous bodies having high temperature stability which comprises the steps of:

a. contacting zirconia fibers with a silicon-containing compound to form an amorphous silica coating on the surface of said fibers, and

b. heating said coated fibers to a temperature and for a period of time to form a zircon phase on said fibers by the reaction of said silica with said zirconia.

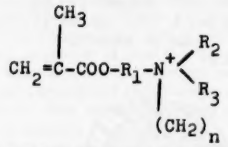
3,861,948
PRESSURE SENSITIVE ADHESIVE TAPE

Carlos M. Samour, Wellesley Hills, Mass., and Mildred C. Richards, Wakefield, Mass., assignors to The Kendall Company, Walpole, Mass.

Continuation of Ser. No. 255,834, May 22, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 414,930
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 PF **2 Claims**

1. An adhesive tape comprising a flexible backing and supported thereon a water-insoluble pressure-sensitive adhesive polymer of monomers consisting essentially of

1. an ionic monomer having the formula



wherein R_1 is an alkylene group having from 2 to 12 carbon atoms, R_2 and R_3 are individually alkyl groups having from 1 to 4 carbon atoms, and Z represents $-SO_3^-$ when n is 2 to 4 and represents $-COO^-$ when n is 1 to 4,

2. at least one alkyl acrylate the molecules of which have up to 18 carbon atoms in the alkyl group, the average number of carbon atoms in such groups being from 4 to 14, the amount of said ionic monomer being from 0.5 to 20% by weight of the total essential monomers, except that when the amouunt of ionic monomer exceeds 10% by weight of the total essential monomers, the minimum average number of carbon atoms in the alkyl groups of

the alkyl acrylate is 6 and increases progressively to 8 when the amount of ionic monomer reaches 20% by weight.

3,861,949
ARTICLE HAVING APPLIED TO THE SURFACE THEREOF, AN ANTI-FOULING COMPOSITION COMPRISING A POLYMER AND AN ORGANO-TIN COMPOUND

Mitsuo Onozuka; Yasuo Hayashi, and Yoshiaki Adachi, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1972, Ser. No. 248,270

Claims priority, application Japan, Apr. 27, 1971, 46-27158; Nov. 1, 1971, 46-86263; Dec. 27, 1971, 46-10548

Int. Cl. B32b *27/06*

U.S. Cl. 117—138.5 **11 Claims**

1. An article to be used in or under water and in contact with water, at least the surface of said article being composed of an anti-fouling composition comprising a polymer and an amount of a substance effective to prevent fouling which comprises an organo-tin compound of the formula:

$$R_1 - \underset{\displaystyle R_3}{\overset{\displaystyle R_2}{Sn}} - O - \underset{\displaystyle R_3}{\overset{\displaystyle R_2}{Sn}} - R_1$$

wherein R_1 is n-dodecyl and R_2 and R_3 are methyl.

3,861,950
PROCESS OF DETACKIFYING RUBBER

Arthur C. Danielson, Royal Oak, and James Ahnehmiller, Detroit, both of Mich., assignors to Uniroyal, Inc., New York, N.Y.

Filed June 1, 1971, Ser. No. 148,948

Int. Cl. B44d *1/22*

U.S. Cl. 117—139 **2 Claims**

1. A method of detackifying rubber which comprises applying to said rubber a solution of a compound having the formula RSCL, wherein R is a phenyl group which is substituted by an alkyl having from 1 to 8 carbon atoms and by an hydroxyl group.

3,861,951
COOKWARE COATED WITH AROMATIC POLYSULFONES

Philip Anthony Staniland, Welwyn, and Graham Jarrett, Hitchin, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 207,958, Dec. 14, 1971, Pat. No. 3,787,363. This application Sept. 20, 1973, Ser. No. 399,342

Claims priority, application Great Britain, Dec. 22, 1970, 60907/70

Int. Cl. A47j *36/04;* **C08g** *49/00, 49/04*

U.S. Cl. 117—161 R **2 Claims**

1. Cookware having non-cooking surface coated with the product obtained by heating to a temperature between 300° and 450°C, a mixture comprising 95 to 99.99 percent by weight of at least one mouldable or film-forming thermoplastic aromatic polysulphone containing repeat units -Ar-SO_2- where Ar is a bivalent aromatic radical which may vary from unit to unit in the polymer chain, at least some of the Ar units having an ether link joining aromatic carbons in the polymer chain ortho or para to a least one -SO_2- group and 5 to 0.01 percent by weight of sulphur present as at least one member of the class consisting of elemental sulphur, aliphatic and aromatic dithiols, and polymeric oxidation products thereof comprising repeat units of the formula -R-S-S- where R is a bivalent aliphatic or aromatic radical, said mixture forming a polymeric material of increased molecular weight, compared to the molecular weight of said polysulphone, when heated between 300° and 450°C.

3,861,952
RECORDING MEDIUM FOR A SPARK BURNING RECORDER

Shinichi Tokumoto, Yokohama, and Chisayo Hayashi, Fujisawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 31, 1972, Ser. No. 222,007

Claims priority, application Japan, Jan. 30, 1971, 46-3507; Jan. 30, 1971, 46-3508

Int. Cl. B44d *1/16, 1/18;* **G01d** *15/08*

U.S. Cl. 117—217 **12 Claims**

5. A recording medium for a spark burning recorder according to claim 1, wherein the base comprises a first organic layer, and a second pigmented or dyed organic layer containing no conductive material in contact with the metal layer.

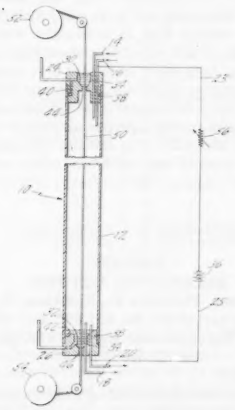
3,861,953
NODE-FREE BORON COMPOSITE FILAMENT

Malcolm Basche, West Hartford, Conn.; Roy Fanti, Springfield, Mass.; Francis S. Galasso, Manchester; Urban E. Kuntz, Hartford, and Richard D. Schile, Wethersfield, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 811,072, March 27, 1969, Pat. No. 3,679,475. This application June 16, 1972, Ser. No. 263,491

Int. Cl. B44d *1/14;* **C01b** *31/07*

U.S. Cl. 117—216 **2 Claims**



1. A node-free composite filament for use in fabrication of fiber reinforced articles comprising:

a filamentary substrate consisting essentially of carbon;

a first coating on the substrate consisting essentially of pyrolytic graphite; and

a second coating thereover consisting essentially of boron, said boron coating being continuous, of a thickness greater than 0.6 mil and of substantially constant diameter.

3,861,954

RECEIVER SHEETS FOR ELECTROSTATIC RECORDING

Kit Funderburk, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 16, 1973, Ser. No. 342,011
Int. Cl. G03g *5/02*
U.S. Cl. 117—218 **9 Claims**

5. Paper comprising a dense paper base sheet having a bulk porosity of less than 200 Sheffield units as measured by a Sheffield Porosimeter with a 1½ inch orifice and air at 1½ pounds per square inch, said paper base being substantially free of conductive material;

a thin first electrically conductive coat on one side of said paper base sheet containing about 20 to 30 percent by weight of an electrically conductive material comprising a homopolymer or copolymer of a vinylbenzyl quaternary ammonium compound, said coat being so distributed as to provide said conductive material in a coat weight between about 0.001 and about 0.5 pound per 1,000 square feet of paper; and

a second electrically conductive coat on the opposite side of said paper base.

7. A method for making electrographic paper comprising: providing a dense paper base sheet having a porosity of less than 200 Sheffield units as measured by a Sheffield Porosimeter with a 1½ inch orifice and air at 1½ pounds per square inch;

applying on one side of said paper base sheet a first aqueous dispersion or solution containing on a dry basis between about 20 and 30 percent by weight of an electrically conductive material which comprises a homopolymer or copolymer of vinylbenzyl quaternary ammonium compound and so distributing said dispersion or solution as to provide a thin first electrically conductive coat containing said conductive material in an amount between about 0.05 and 0.25 pound per 1,000 square feet;

causing water to evaporate from said first aqueous dispersion or solution and leave a dry first conductive coat;

applying on said dry first conductive coat a second aqueous solution or dispersion comprising dielectric material comprising predominantly a dielectric synthetic resin;

allowing water to evaporate from said second aqueous solution or dispersion and leave a dry dielectric coat; and applying a second coat of conductive material on the opposite side of said paper base sheet from said first side of said paper base sheet from said first conductive coat; said first aqueous dispersion or solution being so thinly distributed over said paper that substantially none migrates into said second aqueous solution or dispersion so that the dry dielectric coat remains substantially free of conductive material and exhibits a surface resistivity of at least 1×10^{16} ohms per square feet at 20% relative humidity.

3,861,955

DECORATING METHOD

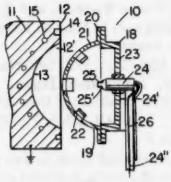
James H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 421,897, Dec. 29, 1964, Pat. No. 3,504,063. This application Mar. 3, 1970, Ser. No. 16,192
Int. Cl. H01f *10/00*
U.S. Cl. 117—235 **2 Claims**

1. A method of selectively coating a thermoplastic material onto a substrate comprising:

disposing a multitude of heat fusible particles of paramagnetic thermoplastic material onto the surface of a substrate as a substantially uniform layer covering a first area of said surface, and magnetically retaining said particles against said first area of said surface, and

while said particles are magnetically held against said first area of said surface by magnetic force, subjecting selected of said particles covering a first portion of said first area of said substrate to heat generating radiation of sufficient intensity to melt and fuse said particles to said first area of said substrate, solidifying the melted particles as a layer against the surface of said substrate and



removing those particles disposed against the remaining portion of said first area of said substrate which have not been caused to melt and fuse to said substrate by said radiation whereby said first portion of said first area of said substate is coated with said paramagnetic material.

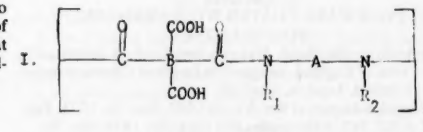
3,861,956

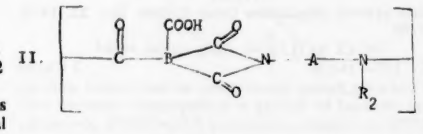
RELEASE AGENTS FOR ADHESIVE TAPES

Andor Schwarcz, Niskayuna, N.Y., assignor to The First Jersey National Bank, Jersey City, N.J.

Filed June 6, 1972, Ser. No. 260,268
Int. Cl. C09j *7/04*
U.S. Cl. 117—68.5 **11 Claims**

1. Pressure-sensitive adhesive material comprising a backing member, a pressure-sensitive adhesive on the front side thereof, and a release coat on the backside thereof comprising a polymeric composition of the general recurring formulae:





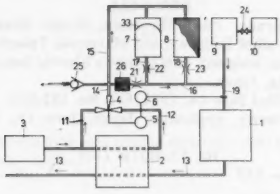
III. mixtures thereof

wherein A is a divalent organic radical having from 2 to 15 carbon atoms, B is a tetravalent radical having at least 4 carbon atoms, R_1 is an alkyl radical containing about 1 to 30 carbon atoms or hydrogen and R_2 is an alkyl radical containing about 12 to 30 carbon atoms the polymeric materials having an intrinsic viscosity of more than about 0.04 as measured in tetrahydrofuran at 30°C.

3,861,957
DEVICE IN A GALVANIC BATTERY FOR FORMING ELECTROLYTE

Esko Ensio Huhta-Koivisto, Helsinki, Finland, assignor to Puolustusministerio, Helsinki, Finland

Filed Oct. 25, 1972, Ser. No. 300,667
Claims priority, application Finland, Oct. 25, 1971, 3016/71
Int. Cl. H01m 23/02
U.S. Cl. 136—83 R 3 Claims



1. A device in a galvanic battery for forming electrolyte, said battery having a cell system consisting of bipolar electric plates, said device comprising an input duct connected to the battery, a tank having a top duct and a bottom duct, means connecting said bottom duct with said input duct, a pressure source, and means connecting said pressure source and with said top duct for supplying water into the upper part of the tank, said tank being filled with a chrome compound, whereby water, in the course of its downward flow in the tank dissolves said chrome compound to increase concentration of chromic acid in the downwardly direction in the tank, the chromic acid being supplied to the battery through said lower duct of the tank, and a sulphuric acid tank, said cell system and said sulphuric acid tank being located within the first-mentioned tank.

3,861,958
PROCESS AND DEVICES FOR RECOVERING ELECTROLYTE LEAKS IN A FUEL CELL

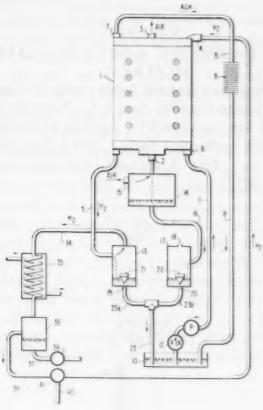
Jacques Cheron, Versailles, France, assignor to Institut Francais du Petrole, Hauts-de-Seine, France

Continuation-in-part of Ser. No. 80,694, Oct. 14, 1970, abandoned. This application June 15, 1972, Ser. No. 262,943
Claims priority, application France, Oct. 17, 1969, 69.35819
Int. Cl. H01m 27/00, 27/12
U.S. Cl. 136—86 R 17 Claims

1. In a process for recovering liquid electrolyte leaks from a gas fuel cell system of the type including a gas fuel cell having a main electrolyte circuit through which electrolyte passes through said gas fuel cell, two gas compartments positioned in said gas fuel cell and normally sealed from the main electrolyte circuit, means connected to said gas compartments for flowing therethrough corresponding gas streams, including a reducing gas stream and an oxidizing gas stream, respectively, which from an outlet of the two gas compartments carry water vapor produced by chemical reactions in the gas fuel cell, wherein the water vapor is removed by condensation from at least one of the two gas streams, said gas streams being subsequently recycled into the corresponding gas compartment of the fuel cell, and wherein electrolyte leaks from the electrolyte circuit into respective gas compartments, the process comprising the steps of:

recovering separately said electrolyte leaks from the reducing gas stream and from the oxidizing gas stream by using the sole action of gravity, prior to said condensing the water vapor, such that any dilution of said electrolyte leaks by the condensed water vapor is prevented,

collecting the so recovered undiluted electrolyte amounts from both gas streams while keeping apart, without possibility of admixture, the reducing gas stream and the oxidizing gas stream, and

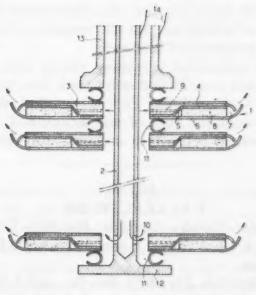


recycling to the main electrolyte circuit of the fuel cell the so collected electrolyte by adding the same to the main electrolyte circuit.

3,861,959
BATTERIES COMPOSED OF FUEL CELLS

Jean Cadiou, Paris, France, assignor to S. A. Automobiles, Citroen, Paris, France

Filed Apr. 20, 1973, Ser. No. 353,008
Claims priority, application France, Apr. 27, 1972, 72.15590
Int. Cl. H01m 27/16
U.S. Cl. 136—86 F 17 Claims



1. In a battery composed of fuel cells of the type having a solid electrolyte and electrically conductive electrodes for the conversion into electrical energy of the chemical energy provided by the reaction of a gaseous fuel and a combustible gas, a stack of said fuel cells each having a central aperture, and a single supporting rod, the cells being assembled on the rod which extends through the central apertures of the cells, the axis of the rod being the axis of symmetry of the battery, and wherein each said cell has plane support-surfaces surrounding the central aperture, the cells being supported by their said plane surfaces, and the said plane surfaces are electrically conductive whereby the cells are connected in series, and

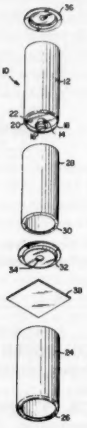
further comprising conductive separator means, the separator means being interposed between the plane surfaces of adjacent cells, and

wherein the separator means is in the form of a resilient seal.

3,861,960
METHOD OF PRODUCING A DRY CELL HAVING THIN FILM SEAL

Ronald S. Parker, and Ronald Reilly, both of Teheran, Iran, assignors to Union Carbide Iran S.A., Teheran, Iran

Division of Ser. No. 240,919, April 4, 1972, Pat. No. 3,753,781. This application June 4, 1973, Ser. No. 366,439
Int. Cl. H01m *31/00*
U.S. Cl. 136—107 **8 Claims**



1. A method for packaging a dry cell in a cylindrical metal jacket comprising:

positioning an insulating film across one end of said jacket to completely cover said end;

positioning an insulating disc, of a diameter smaller than the diameter of said jacket, on said insulating film in register with the periphery of said end;

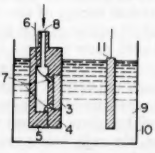
ramming a cylindrical insulating sleeve into said jacket, through said end, in a manner such that said insulating disc and said insulating film are pushed ahead of said sleeve through the bore of said jacket; and

inserting said dry cell within said insulating sleeve.

3,861,961
GAS ELECTRODE

Tetsuichi Kudo; Motoko Yoshida; Hidehito Obayashi, and Tetsuo Gejyo, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 23, 1973, Ser. No. 335,336
Claims priority, application Japan, Feb. 25, 1972, 47-18944
Int. Cl. H01m *13/00*
U.S. Cl. 136—120 FC **7 Claims**

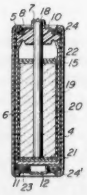


1. A gas electrode which comprises a porous sintered body of an oxide having a perovskite type crystal structure represented by a general formula of $Ln_{1-x}A_xCo_{1-y}Ni_yO_{3-\delta}$, where $0 \leq x \leq 0.6$, $0.01 \leq y \leq 1.0$, $0 \leq \delta \leq (x/2)$, Ln denotes at least one element selected from the group consisting of La, Pr, Nd, Sm, Gd and Y, and A denotes at least one element selected from the group consisting of Ca, Sr and Ba, and a water repelling agent filling up interstices of said sintered body.

3,861,962
DRY CELL

Masahiro Harada; Yuuji Hirokawa; Syohei Nozaki; Kenji Miyahara, all of Fujisawa, and Matsuyuki Takeda, Isehara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 14, 1971, Ser. No. 152,806
Claims priority, application Japan, June 19, 1970, 45-61490[U]
Int. Cl. H01m *1/02*
U.S. Cl. 136—133 **3 Claims**



1. A dry cell comprising a zinc can containing power-generating elements having an anode and cathode at opposite ends thereof with one end opening being closed with a sealing plate, a cathode cap mounted on a conductive element projecting upward through said sealing plate, said cathode cap having an element integral therewith which is disposed on said sealing plate, an anode element in contact with the other end of said zinc can, a first insulating ring located above said element of said cathode cap and having a rim with each of the upper and lower sides thereof provided with a protrusion, a second insulating ring located along the rim of said anode terminal plate and having a protrusion on the lower side of its rim, and an outer jacket covering the outer surface of said zinc can and with its both side ends butted against each other, said lower protrusion of the first insulating ring being positioned between a peripheral portion of said element of said cathode cap and an inner surface of said outer jacket, said outer jacket having its upper end bent inward and folded over said protrusion provided on the upper side of said rim of said first insulating ring, said outer jacket having its lower end bent inward and folded over said protrusion provided on the lower side of said rim of said second insulating ring.

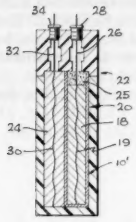
3,861,963
BATTERY SEPARATOR CONSTRUCTION

Frank C. Afrance, Costa Mesa; Albert G. Rosa, Placentia, and Ronald J. Haas, Orange, all of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Continuation of Ser. No. 707,808, Feb. 23, 1968, abandoned. This application June 17, 1971, Ser. No. 154,218
Int. Cl. H01m *3/02*
U.S. Cl. 136—146 **11 Claims**

1. A flexible porous battery separator for a high energy density battery, which consists essentially of a flexible asbestos porous substrate coated with a film consisting essentially of a major portion of an inorganic separator material, a minor portion of potassium titanate fibers and a minor portion of a cured organic polymer selected from the group consisting of polyphenylene oxide and polysulfone, bonding the particles of said inorganic material and said potassium titanate fibers

together to form a porous substantially inorganic separator film on and adhered to said substrate, the resulting porous



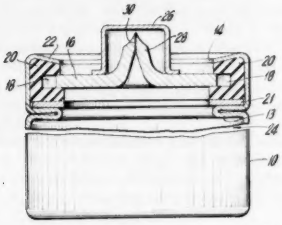
substrate containing said coated separator film being flexible and resistant to alkali.

3,861,964

BATTERY CONSTRUCTION CAPABLE OF SAFELY VENTING INTERNAL PRESSURE

Ignatius Michalko, Ossining, N.Y., assignor to Power Conversion, Inc., Mt. Vernon, N.Y.

Filed Jan. 30, 1973, Ser. No. 327,938
Int. Cl. H01m *1/02*
U.S. Cl. 136—177 **6 Claims**



1. A battery capable of safely venting its contents at a predetermined pressure comprising a casing open at one end within which an electro-chemical system capable of generating high internal pressure is confined, an internal ridge spaced from the open end of the casing, cover means disposed across the open end of the casing for closing sand open end, said cover means defining a plurality of slots that extend inwardly from the perimeter thereof, a compressible sealing member that engages the perimeter of the cover and overlies the slots, and an inwardly extending portion at the open end of the casing which engages the sealing member, said internal ridge being spaced from said open end to effect pressing of the sealing member against the inwardly extending portion, said cover means being deformable to expose a slot and rapidly release the internal pressure when a predetermined pressure limit has been reached.

3,861,965

LEAD-ACID BATTERY WITH RESEALABLE VENT VALVE

Thomas Denis O'Sullivan, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 7, 1972, Ser. No. 287,004
Int. Cl. H01m *1/06*
U.S. Cl. 136—178 **5 Claims**

1. Apparatus comprising at least one lead acid storage cell, each cell comprising:

a. a receptacle,

b. a pair of spaced electrodes so arranged as to be partially immersed when an electrolyte is introduced into the receptacle,

c. the receptacle being provided with an orifice containing a valve, which is normally closed but is designed to open upon attainment of a first differential positive pressure within the cell relative to external pressure and is designed to close at a second differential pressure, with the first pressure being greater than the second pressure,

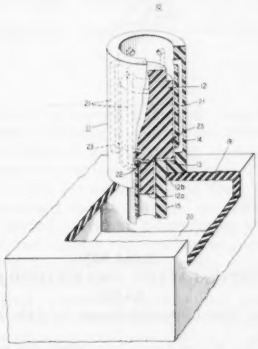
characterized in that the valve comprises:

(a) a tubular member comprising:

1 a first hollow sleeve portion having an inner vertical surface of substantially constant diameter,

2 a second hollow sleeve portion, one end of which is joined to the lower end of the first sleeve portion, the second sleeve portion (a) having an inner vertical surface of smaller diameter than the first sleeve portion to thereby form a shoulder at the juncture of the first and second sleeve portions and (b) extending through the orifice into the cell, and

3 at least one channel extending from interior the juncture region of the lower end of the first sleeve portion



to exterior the valve for providing release of pressure from the cell when the valve is open; and

(b) a slug capable of moving in response to pressure generated in the cell by formation of gases, the slug comprising:

1 a first cylindrical portion of approximately the same constant diameter as the first sleeve portion and slidably mounted in the first sleeve portion,

2 a second cylindrical portion, (a) a first end of which is joined to the lower end of the first cylindrical portion, the second cylindrical portion having a smaller diameter than the first cylindrical portion so as to define an annular shoulder at the juncture of the first and second cylindrical portions, which annular shoulder mates with the shoulder of the tubular member so as to seal the cell when the valve is closed, and (b) a second end of which terminates within the second sleeve portion, such that when the valve is closed, the pressure in the cell acts only on the second end of the second cylindrical portion extending into the second sleeve portion and such that when the valve is open, the pressure in the cell acts on the combined cross-sectional areas of the second end of the second cylindrical portion extending into the second sleeve portion and of the annular shoulder.

3,861,966
DENSIFICATION OF ALLOYS

William Scheithauer, Jr., Athens, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Aug. 15, 1973, Ser. No. 388,392
Int. Cl. B22f 3/00
U.S. Cl. 148—11.5 F 5 Claims

1. A process consisting essentially of
a. heat treating a relatively porous shaped article having a refractory metal oxide dispersoid in a matrix of a matrix metal and a matrix metal oxide, said article having a density of less than about 75 percent of theoretical, in a reducing atmosphere at a temperature and for a time sufficient to remove the volatiles and oxygen from the matrix metal and the matrix metal oxide without the reduction of said refractory metal oxide and without any significant densification of said shaped article,
b. providing a nonoxidizing atmosphere around the resulting heat treated article, and
c. working said heat treated article in an uncanned state at a temperature of from about 800° to about 1,200° C to a thickness of from about 58 to about 72 percent of its original thickness without decreasing the width of said article to increase the density of the resulting slab to at least about 90 percent of theoretical.

3,861,967
ZINC-ALUMINUM ALLOY AND METHOD OF MAKING SAME

Erich Pelzel, Otto-Lilienthal-Strasse 3, 519, Stolberg, Germany

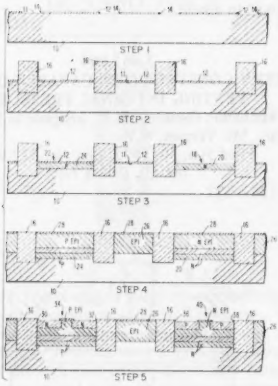
Division of Ser. No. 53,039, July 7, 1970, Pat. No. 3,785,811. This application Nov. 23, 1973, Ser. No. 418,776
Claims priority, application Germany, July 9, 1969, 1934788
Int. Cl. C22f 1/16; C22c 17/00
U.S. Cl. 148—11.5 R 5 Claims

1. A method of making a metal body composed of a zinc-aluminum alloy consisting essentially of a metallic component consisting of aluminum in an amount between 18 and 24 percent by weight of the alloy, a second metallic component consisting of zinc in an amount between 81.9 percent and 74.5 percent by weight of the alloy, and a third metallic component in an amount between 0.1 and 1.5 percent by weight of the alloy, the major proportion of the said third component consisting of nickel, and the said third component including at least one other metal of the group consisting of titanium, copper, iron, and silicon, the amount of titanium being between 0.05 percent and 0.50 percent by weight of the alloy and not exceeding 50 percent by weight of the nickel content of the alloy, the amount of copper being up to 0.5 percent by weight of the alloy, and the total amount of copper, iron and silicon in the alloy not exceeding 50 percent by weight of the total content of nickel and titanium in the alloy, the said method comprising extruding the said alloy at a temperature close to its melting point in such manner that each cubic millimeter of the volume of the extruded alloy body has an external surface whose area is between 0.04 and 0.20 square millimeter and rapidly cooling the said surface of the extruded alloy body to solidify the same.

3,861,968
METHOD OF FABRICATING INTEGRATED CIRCUIT DEVICE STRUCTURE WITH COMPLEMENTARY ELEMENTS UTILIZING SELECTIVE THERMAL OXIDATION AND SELECTIVE EPITAXIAL DEPOSITION

Ingrid E. Magdo, and Steven Magdo, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 19, 1972, Ser. No. 263,881
Int. Cl. H01l 7/36, 27/02
U.S. Cl. 148—175 5 Claims

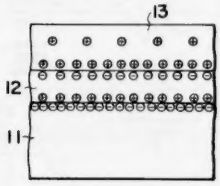


1. A method for fabricating a planar dielectrically isolated semiconductor structure comprising:
providing a monocrystalline silicon substrate embodying an impurity for semiconductors of a first type,
depositing a surface layer of dielectric material on a major surface of said substrate,
removing portions of said layer to expose surface area portions to define annular channels,
thermally oxidizing the exposed surface areas of said substrate thereby forming annular ridges of SiO_2 which extend to a predetermined distance above and below the surface of said substrate,
removing portions of said dielectric layer to expose at least additional surface areas of said substrate,
diffusing an impurity for semiconductors of a second opposite type into said silicon substrate through the exposed surface areas forming a high conductivity region and a generally laterally extending P-N junction within said substrate,
selectively growing an epitaxial silicon layer over said additional surface areas, said annular ridges of SiO_2 and said laterally extending P-N junction electrically isolating pockets of epitaxial silicon, the surfaces of said ridges and said regions of epitaxial silicon substantially co-planar.
selectively introducing impurities for semiconductors into said insulated pockets of epitaxial silicon forming active semiconductor devices.

3,861,969
METHOD FOR MAKING III–V COMPOUND SEMICONDUCTOR DEVICES

Yuichi Ono, Kokubunji; Kazuhiro Kurata, Hachioji; Masahiko Ogirima, Tokyo, and Toshimitu Shinoda, Hamura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 129,809, March 31, 1971, abandoned. This application Nov. 23, 1973, Ser. No. 418,212
Claims priority, application Japan, Mar. 31, 1970, 45-27286
Int. Cl. H01l 7/44
U.S. Cl. 148—187 4 Claims



1. A method for making III–V compound semiconductor devices comprising the steps of:

a. preparing a semiconductor substrate made of a III–V compound of first conductivity type;

b. depositing an Si_3N_4 layer, which is about 1,000 to 3,000 A thick, by a chemical vapor deposition method at a temperature comprised between 600° and 800°C with a sufficiently low flow rate of SiH_4 and NH_3 so as to give a growth rate of the Si_3N_4 layer comprised between about 10 A/min and 100 A/min, at least partly on a surface of said substrate;

c. depositing a phosphosilicate glass layer, which is about 2,000 to about 6,000 A thick and in which the atomic percent ratio of P_2O_5 to SiO_2 is about 1 to about 10%, on said Si_3N_4 layer, covering substantially the whole outer surface of said Si_3N_4 layer;

d. removing at least a part of the double layer consisting of said Si_3N_4 layer and said phosphosilicate glass layer by photoetching to thereby form a window for selective diffusion;

e. diffusing second conductivity type impurity atoms through said window into said substrate by using said double layer as a diffusion mask, thereby forming a diffusion layer;

f. depositing a metal layer on at least a part of the surface of said diffusion layer within said window, thereby forming an electrode; and

g. depositing a metal layer on the other side of said substrate, thereby forming another electrode.

3,861,970
PROPELLANT COMPOSITION CONTAINING BERYLLIUM HYDRIDE, NITROCELLULOSE AND NITRATE CO-PLASTICIZERS

Walter E. Baumgartner, and Philip G. Butts, both of Redlands, Calif., assignors to The United States of America as represented by the Secretary of the United States Air Force

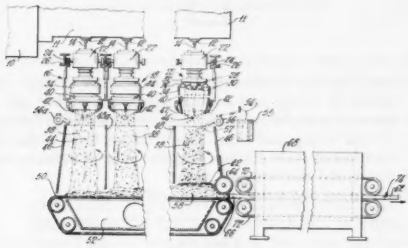
Filed June 25, 1968, Ser. No. 740,834
Int. Cl. C06d 5/06
U.S. Cl. 149—19.8 4 Claims

1. A solid rocket propellant composition which comprises about 9–14 percent by weight of nitrocellulose, 3–15 percent by weight of an active co-plasticizer selected from the group consisting of diethyleneglycol dinitrate and ethyleneglycol dinitrate, 0–35 percent by weight of an inorganic oxidizer, 15–24 percent by weight of beryllium hydride and 10–40 percent by weight of a nitro-nitrate ester plasticizer selected from the group consisting of nitroisobutanetriol-trinitrate, 2,2-dinitropropanediol dinitrate and nitroethylnitrate.

3,861,971
METHOD OF PRODUCING A BOARD OF FIBROUS GLASS AND THE PRODUCT THEREOF

Stuart H. Stapleford, Atlanta, Ga., and Charles E. Nutter, Hebron, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 874,428, Nov. 6, 1969, abandoned. This application Oct. 6, 1970, Ser. No. 78,532
Int. Cl. C09j 3/30; C03c 25/00
U.S. Cl. 156—62.2 1 Claim



1. A method of producing a thermal insulating roofing board of bonded, randomly positioned and spacedly related individual, discontinuous glass fibers with strands of multiple glass filaments distributed over the top surface of the board in bonded relation with the individual glass fibers, said method comprising depositing upon a conveyor randomly positioned and spacedly related individual, discontinuous glass fibers as a pack with a heat settable resinous binder dispersed therethrough, passing the pack beneath a roller to initially compress the pack, distributing over the top surface of the pack short unshredded strands of definite and predetermined lengths and containing numerous closely grouped parallel filiments, dimensionally stabilizing the pack and providing rigidity for the resulting roofing board by heat setting the binder while compressing the pack to its final highly air permeated density, the setting of the binder cohering the adjacent glass fibers and the surface strands, as well as the glass fibers throughout the pack, placing a coating of melted asphalt upon the upper surface of the dimensionally stabilized pack to further cohere the fibers and the strands through the gravity motivated downward entry of the asphalt, limiting, through cooling means, the penetration into the pack of the melted asphalt to the glass fibers adjacent the top surface of the pack thus preserving the air permeated, thermal insulating properties of the major portion of the pack, and laying a surfacing sheet over the asphalt coated pack for attachment by the asphalt and for further cooling and hardening of the asphalt.

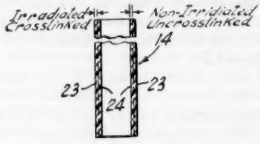
3,861,972
INTRAVENOUS CATHETER

George M. Glover, Somerville; Melvin Nimoy, East Brunswick; DeWitt R. Petterson, Basking Ridge, and Albert J. Volk, Martinsville, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 66,429, Aug. 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 7,286, Jan. 30, 1970, abandoned. This application Oct. 20, 1972, Ser. No. 299,547
Int. Cl. B29c 27/02
U.S. Cl. 156—86 2 Claims

1. The method of making a plastic catheter-hub assembly comprising the steps of:

1. providing a mandrel having a catheter forming portion and hub forming portion;
2. placing a length of irradiated-crosslinked expanded plastic tubing over said mandrel, one end of said tubing overlying said hub forming portion and the remainder of said tubing overlying said catheter forming portion;
3. placing an expanded plastic sleeve having an irradiated-crosslinked outer surface and an uncrosslinked inner surface over said one end of said tubing;



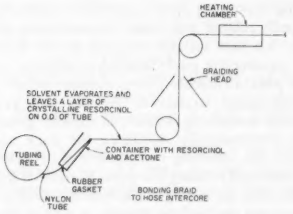
4. applying heat to said tubing and said sleeve to cause said tubing to shrink into contact with said mandrel and to cause said sleeve to shrink into contact with said one end of said tubing, said heat being effective to melt said uncrosslinked inner surface to create a bond between said sleeve and said one end; and
5. removing said assembly from said mandrel.

3,861,973

POLYAMIDE HOSE AND PREPARATION THEREOF

Robert B. Koch, Reading, Pa., assignor to Rilsan Corporation, Glen Rock, N.J.

Filed Feb. 27, 1973, Ser. No. 336,387
Int. Cl. B32b *1/08*
U.S. Cl. 156—143 **26 Claims**


HEATING CHAMBER
BRAIDING HEAD
SOLVENT EVAPORATES AND LEAVES A LAYER OF CRYSTALLINE RESORCINOL ON O.D. OF TUBE
TUBING REEL
CONTAINER WITH RESORCINOL AND ACETONE
RUBBER GASKET
NYLON TUBE
BONDING BRAID TO HOSE INTERCORE

1. A process for the preparation of a reinforced hose construction which comprises contacting a polyamide or copolyamide tubing with an aqueous resorcinol solution or an alcoholic resorcinol solution, drying said solution thereby forming a crystalline material on the surface of said tubing, applying to said tubing a layer of a synthetic or natural fiber followed by heating the reinforced tubing to a temperature of at least about 150°F.

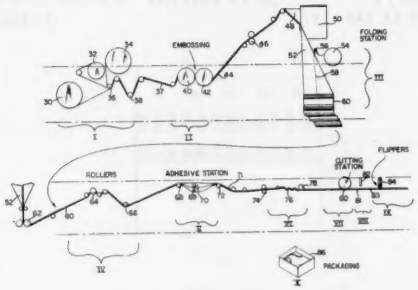
3,861,974

METHOD OF MANUFACTURING A REINFORCED EXAMINATION GOWN

Michael E. Trombly, Livonia, and Samuel H. Cowen, Southfield, both of Mich., assignors to Chemed Corporation, Cincinnati, Ohio

Division of Ser. No. 199,149, Nov. 16, 1971, Pat. No. 3,751,729. This application Mar. 13, 1973, Ser. No. 340,800
Int. Cl. B32b *7/14*; **A41d** *27/1*
U.S. Cl. 156—200 **4 Claims**

1. A method for preparing a disposable gown which comprises, supplying a first and a second continuous strip of relatively wide tissue grade paper, supplying a continuous strip of relatively narrow reinforcing material about centrally between the width of said first and second strips, laminating the reinforcing strip material between the first and second strips of relatively wide tissue grade paper with the reinforcing material approximately centrally disposed relative to the width thereof, folding along the longitudinal direction the laminated paper into a folded W configuration, applying adhesive in a transverse direction along a line between legs projecting from the central peak of the folded W configuration so as to bond adjacent faces of saidfolded W along said line, said application



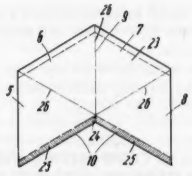
of adhesive being effected at pre-determined intervals along the longitudinal direction of the folded W configuration, continuously cutting arcuate sections from the folded W configuration at a location subsequent and adjacent to the forward location of the said adhesive line such that each adhesive line has arcuate sections removed from opposite end portions, and severing a disposable gown from a continuous strip along a transverse line at a location preceding the location of the said adhesive line so that each gown has one adhesive line disposed near one edge thereof.

3,861,975

FILTERING DEVICE AND PROCESS OF MANUFACTURING THE SAME

Reinhard Hauslein, Minden, Germany, assignor to Melitta-Werke Bentz & Sohn, Minden/Westfalen, Germany

Filed May 1, 1973, Ser. No. 355,988
Claims priority, application Germany, May 4, 1972, 2221831
Int. Cl. B20d *23/10*
U.S. Cl. 156—217 **10 Claims**



1. A process for producing filter elements from a strip of filter material having parallel longitudinal edges and a center line equidistant from said edges, comprising the steps of cutting said strip along a series of equidistant parallel V-shaped cutting lines with the apexes of said V-shaped cutting lines located in said center line and each of said cutting lines forming an acute angle of 60° with said center line of said strip, the distances between said cutting lines in longitudinal direction of said strip portion being at least equal to the length of each of said cutting lines from said center line to one of said edges of said strip-shaped portion; folding each of the thus obtained blanks into a pyramid-shaped filter element, and securing the

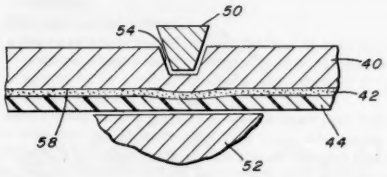
free edges of each of said blanks to each other so as to maintain said filter elements in folded condition.

3,861,976

LAMINATED CONTAINER WALL

Herbert Gayner, Monroeville, and David A. Smith, Penn Hills, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 190,559, Oct. 19, 1971, Pat. No. 3,747,797. This application Sept. 15, 1972, Ser. No. 289,215
Int. Cl. B32b *31/20*
U.S. Cl. 156—257 **4 Claims**



1. A method of fabricating a laminated metal container wall provided with an opening device comprising

providing a metal sheet having a layer of adhesive selected from the group consisting of epoxy, polyester and polyurethane permanently secured to one surface thereof and securing to said metal sheet a continuous layer of protective material generally coextensive with at least the portion of said metal sheet which will provide a container wall blank and selected from the group consisting of a copolymer of a polyolefin and ethylene with the ethylene content by weight being about 2 to 10 percent,

scoring said metal sheet to define a removable sector therein and said scoring being effected without any post-scoring application of a repair coating to protectively cover the undersurface of said scoring,

effecting said scoring to such a depth as to retain residual metal along said score line,

prior to effecting said scoring severing a container wall blank from said sheet,

after severing said container wall blank reforming said blank to establish a continuous container wall, and

simultaneously with said scoring operation reducing the thickness of said layer of protective material in regions underlying said score line by about 10 to 50 percent of the original thickness therefore without penetrating entirely through said layer whereby said container wall will have been fabricated without the need for repair coating while preserving the integrity of said protective layer and avoiding significant perforation or blistering of said protective layer.

3,861,977

PROCESS FOR VACUUM BAG MOLDING

Nathaniel C. Wiley, Weston, Conn., assignor to Rudkin-Wiley Corporation, Stratford, Conn.

Filed Nov. 21, 1972, Ser. No. 308,582
Int. Cl. B29c *17/04*
U.S. Cl. 156—242 **8 Claims**

1. A method for bonding a core layer between two shell layers comprising the steps of:

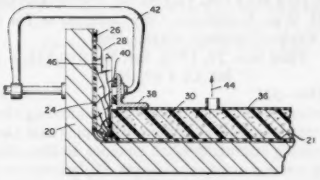
A. applying a first shell layer to a supporting surface wherein said first shell layer comprises an air inhibiting compound;

B. applying a core layer directly to said first shell layer for bonding therewith;

C. covering said core layer with a vacuum bag;

D. sealing the peripheral edges of said bag directly to a portion of said shell layer extending peripherally beyond said core layer;

E. withdrawing air from within the sealed bag, thereby reducing the air pressure therein;



F. maintaining said reduced air pressure within said sealed bag until the bond is cured between said shell layer and said core layer; and

G. bonding a second shell layer to said core layer and said shell layer.

3,861,978

METHOD OF JOINING TWO BODIES AFTER TREATMENT WITH AN INORGANIC COLLOID

Kent Brian Connole, and Wesley Peter Townsend, both of East Windsor Township, Mercer County, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,459
Int. Cl. C09j *5/02*; B32b *31/12*
U.S. Cl. 156—308 **11 Claims**

1. In an improved method of joining two bodies by means of an adhesive, which forms a contact angle of 0° with a contacting region of a surface of at least one of the bodies, which comprises:

a. applying the adhesive to the contacting region; and

b. contacting together the respective contacting regions of the bodies to obtain a joining thereof, wherein the improvement comprises:

prior to step (a) above, treating the contacting region with a stable aqueous colloidal solution, formed by a hydrolysis and nucleation reaction, comprising insoluble hydrous oxide particles of an element selected from the group consisting of Be, Mg, Ti, Zr, V, Cr, Mo, W, Mn, Fe, Co, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Al, In, Tl, Si, Ge, Sn, Pb, Bi, La, Ce, Th, U and mixtures thereof, said particles having a size within the range of 10A to 10,000A and said hydrolysis reaction including at least (1) dissolution of a salt of said selected element in an aqueous medium and (2) maintenance of the pH of said aqueous medium at a point where no flocculate results

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3,861,979

FIXING OF SLABS TO WALL SURFACES

Robert Richard Dzurilla, Seven Hills, and Edward John Jago, Berea, both of Ohio, assignors to Foseco Trading A.G., Chur, Switzerland

Continuation of Ser. No. 832,818, June 12, 1969, abandoned. This application Sept. 25, 1972, Ser. No. 291,718
Int. Cl. C09j *5/00, 7/04*
U.S. Cl. 156—313 **2 Claims**

1. In the fixing of a hot top lining slab to a surface of a member selected from the group consisting of ingot moulds and head boxes, the steps of affixing to the hot top lining slab a strip of textile material bearing on the side thereof facing away from the hot top lining slab a bead of a resinous substance which on heating first softens to a tacky condition and thereafter sets to an infusible condition, locating the hot top lining slab adjacent said surface to which the slab is to be fixed with the bead of resinous substance engaging said surface to

which the hot top lining slab is to be attached, heating said bead and allowing the resinous substance to melt and thermoset to bond the hot top lining slab to said surface.

3,861,980

COMPOSITE OF POLYESTER BONDED TO RUBBER, METHOD FOR MAKING THE SAME AND COMPOSITION

Richard M. Wise, Uniontown, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Nov. 29, 1972, Ser. No. 310,525
Int. Cl. C09j *3/12*
U.S. Cl. 156—331 **4 Claims**

1. A method for adhering a polyester reinforcing element to a rubber compound which comprises dipping said element in a dip consisting essentially of an aqueous alkaline dispersion containing a minor amount by weight of a mixture of a major amount by weight of a rubbery vinyl pyridine copolymer and a minor amount by weight of a heat reactable 2,6-bis(2,4-dihydroxy phenylmethyl)-4-chlorophenol composition, drying the same, and combining said dipped and dried element with a vulcanizable rubber compound and vulcanizing the same.

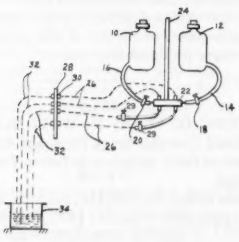
2. A method for adhering a polyester reinforcing element to a rubber compound which comprises treating said element with a composition consisting essentially of an aqueous alkaline dispersion of from about 10 to 30% by weight (as dry solids) of a mixture of a rubbery vinyl pyridine copolymer and a heat reactable 2,6-bis(2,4-dihydroxy phenylmethyl)-4-chlorophenol composition, the parts by weight ratio of said copolymer to said chlorophenolic compound being from about 100:10 to 100:75, heat treating said element to remove the water and to heatset the solids from said composition and to deposit on said element from said composition a total of from about 3 to 7% by weight (solids), cooling said treated element, combining said cooled treated element with an unvulcanized vulcanizable rubber compound, and vulcanizing the same, said heat treatment being conducted at temperatures of from about 300° to 500°F. for from about 30 to 150 seconds.

3,861,981

PORTABLE ETCHING SYSTEM FOR HOLES DRILLED IN METALS

Kenneth Loo, Torrance, Calif., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Jan. 24, 1973, Ser. No. 326,208
Int. Cl. C23f *1/02*
U.S. Cl. 156—345 **4 Claims**



1. A system for etching holes drilled in metals comprising a first container means for storing an etching solution; a second container means for storing a rinse solution; a manifold; manifold screw clamps for controlling the flow of fluid; tubing means connecting said first and second container means to the manifold screw clamps; tubing means connecting said manifold screw clamps to the manifold; adapter means; tubing means connecting the said adapter to the manifold; a third container means for collecting the said etching solution and said rinse solution, and tubing means connecting the adapter means to the said third container means.

3,861,982

APPARATUS FOR PRODUCING SHEET MOLDING COMPOSITE

Edward L. Wilson, Newark; John J. McCluskey, Granville, both of Ohio; Ronald Z. Bell, Huntsville, Ala.; Richard T. Linak, Jackson, Tenn., and Gordon P. Armstrong, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 6, 1972, Ser. No. 215,770
Int. Cl. B32b *31/06*
U.S. Cl. 156—356 **9 Claims**

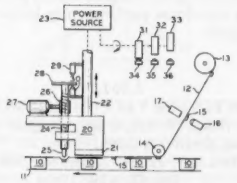
7. Apparatus for producing resin-containing material in a flat form of predetermined thickness between two flexible sheets, said apparatus comprising a first generally horizontally-disposed sheet, a second generally horizontally-disposed sheet, means for distributing resin-containing material on an upper surface of said first sheet, means for distributing resin-containing material on an upper surface of said second sheet, means for turning over said second sheet, means for guiding and moving said sheets in a common direction with the surfaces having the material thereon facing one another, a single source of resin-containing material, means for forming the resin-containing material from said source into a stream, distributor means having a trough for intercepting the entire stream, for dividing the stream into two portions and for directing the entire first portion toward said first distributing means and for directing the entire second portion toward said second distributing means, and means for moving said distributor means relative to the stream for changing the relative amounts of the two portions.

3,861,983

FILM POSITIONING APPARATUS

Melvin R. Harrell, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 12, 1973, Ser. No. 332,030
Int. Cl. B29c *27/06*; **B65h** *25/06*
U.S. Cl. 156—361 **4 Claims**



1. In apparatus for sealing film to a series of containers which are moved by a conveyor to a sealing station, a film having a series of sensing means thereon in spaced relationship with one another is passed into engagement with the containers, a sealing head is positioned at the sealing station for reciprocal movement toward and away from the conveyor to seal the film to the containers, a detector is positioned so

as to be actuated by the sensing means as the film moves past the detector, a tucker bar is carried by the sealing head to engage the film and displace it relative to the containers, and a reversible motor is connected to the tucker bar to move the tucker bar relative to the sealing head, improved apparatus to control the motor comprising:

first, second and third switches;

means to close said first switch when said sealing head is moved toward said conveyor and to open said first switch after said sealing head has moved away from said conveyor;

means to close said second switch momentarily when said sealing head is moved toward said conveyor;

means to close said third switch for a predetermined time interval after the sealing head has moved away from the conveyor;

first and second relays;

a fourth switch actuated by said detector so as to be in a first position when a sensing means is adjacent said detector and to be in a second position when there is no sensing means adjacent said detector;

first circuit means including said first, second and fourth switches to energize said first relay when said fourth switch is in said first position and to energize said second relay when said fourth switch is in said second position; second circuit means including said first and second relays and said third switch to energize said motor for rotation in a first direction when said third switch is closed, said second relay is energized and said first relay is deenergized; and

third circuit means including said first and second relays and said third switch to energize said motor for rotation in a second direction when said third switch is closed, said second relay is energized and said first relay is energized.

3,861,984

MANDREL FOR THE PRODUCTION OF REINFORCED PLASTIC TUBING

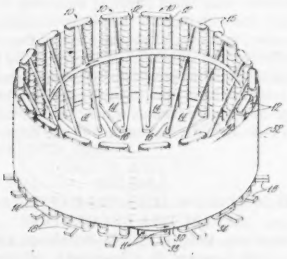
Peder Ulrik Poulsen, Fredensborg, Denmark, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed July 13, 1972, Ser. No. 271,309

Claims priority, application Denmark, Nov. 2, 1971, 5344/71

Int. Cl. B32b *31/00*

U.S. Cl. 156—425 **13 Claims**



1. A mandrel for the production of tubing, comprising:

a hollow core supported at one of its ends;

an endless strip wound helically around said core in the direction from the supported end of the core toward the other end and extending back through the interior of the core to the supported end, the successive convolutions of the helically wound strip forming a surface upon which the tubing is formed;

means depending from the inner surface of the endless strip along its length co-operatively engaging support means on the core in a manner effective to provide support for each convolution of the strip in the axial direction of the forming surface; and

means for advancing the endless strip relative to the core.

3,861,985

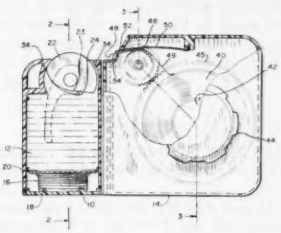
BANDAGE STORAGE AND DISPENSING CONTAINER

Thomas J. Parlagreco, 5 Ferris Ct., Ho-Ho-Kus, N.J. 07423

Filed Oct. 31, 1973, Ser. No. 411,473

Int. Cl. B32b *31/00;* **A01c** *9/00;* **B26f** *3/02*

U.S. Cl. 156—517 **19 Claims**



1. A combination container for the separate storage and dispensing of pads and adhesive tape such as used for bandaging, said combination including: (a) a pad storage container adapted to slidably retain the sides of a stack of like-sized pads within said container; (b) a support member slidably carried within the container and providing means to engage and retain one end of the stack of pads; (c) a picker head rotatably mounted in said container, the head having at least two pin-like projections carried on and extending from the head and these pins moved with the rotation of the head; (d) bias means for urging the support member and the stack of pads carried thereon toward and to the picker head so as to bring the topmost pad into engagement with the pin-like projections when said head is in an "at rest" condition and to impale this topmost pad on these projections; (e) means for rotating the picker head an amount sufficient to move the impaled pad from its topmost position on the stack to a discharge condition outside the container and to then return said head to said "at rest" position and condition; (f) an adhesive tape storage container removably attached to the pad storage container, the tape storage container having means for rotatably retaining a roll of adhesive tape therein; (g) means for engaging and pulling a selected length of tape from the roll and for discharging this desired length of tape from an outlet of the container, and (h) means for severing the discharged length of tape from that portion of tape still connected to and wound on the roll, the dispensed pad and strip of severed adhesive tape being combined to provide an adhesive strip bandage for conventional use on a patient.

3,861,986

DECORATING APPARATUS

Fred Joseph Wochner, Holliston, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

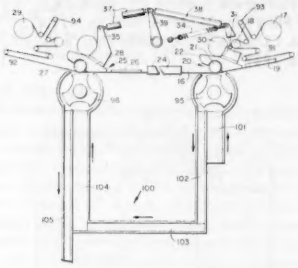
Division of Ser. No. 71,598, Sept. 11, 1970, Pat. No. 3,709,755. This application Sept. 14, 1972, Ser. No. 291,828

Int. Cl. B65c *9/06, 3/14*

U.S. Cl. 156—542 **10 Claims**

4. Labelling apparatus for applying heat transfer labels carried on a single web to bottles at two labelling stations, one positioned downstream from the other, comprising conveyor means for providing bottles at two different locations, first and second turrets, one positioned at each of said labelling stations for carrying bottles through each of said stations in order to permit a label to be applied substantially simultaneously at each of said stations, means for moving a single web supporting a sequence of labels to position the labels carried thereby

such that for each movement of the web between stations the odd numbered labels of said sequence of labels are positioned at said first turret and even numbered labels of said sequence are positioned at said second turret, and means for simultaneously pressing labels positioned at each of said stations against bottles at each of said stations as bottles and the web are moved at each of said stations, said means for pressing said labels removing said odd numbered labels from said web prior to said even numbered labels reaching said second turret.

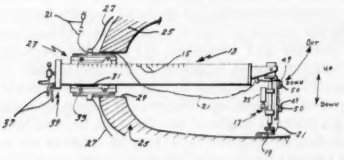


3,861,987

GAUGE INSTALLATION TOOL

Bobby C. Harbert, Waco, Tex., assignor to The United States of America as represented by the Secretary of the United Air Force, Washington, D.C.

Filed Oct. 11, 1973, Ser. No. 405,722
Int. Cl. B25j *1/08, 15/06;* **B65h** *9/08*
U.S. Cl. 156—556 **5 Claims**



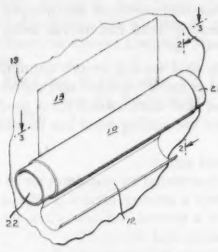
1. A gauge installation tool for positioning an article such as an adhesive coated clip gauge in a normally inaccessible location, said installation tool comprising, a main tube for insertion through an opening in a substantially enclosed body with limited accessibility to the interior portion thereof, a gauge installing arm with one end pivotably attached to the inner end of said main tube, means for temporarily holding the adhesive coated gauge on the other end of said gauge installation arm, means at the outer end of said main tube for controlling the angular orientation of said gauge installation arm relative to said main tube, said angular controlling means operating to cause said installation arm to pivot 90° downward and upward, means on the outer end of said main tube for controlling the length of said installation arm, said length controlling means operating to cause said arm to lengthen and press the gauge held thereon against the inside wall of the substantially enclosed body, and means for determining the amount of pressure on said gauge, thereby causing the gauge to become permanently adhesively attached to the inner surface of the substantially enclosed body.

3,861,988

PRESSURE SENSITIVE ROLLED SHEETING APPLICATOR AND DISPENSER

Samuel L. Preisler, 3210 Ave. H., Brooklyn, N.Y. 11210

Filed Jan. 22, 1973, Ser. No. 325,872
Int. Cl. B32b *31/20*
U.S. Cl. 156—577 **4 Claims**



1. A pressure sensitive rolled sheeting applicator and dispenser for automatically and simultaneously removing a backing strip from a roll of pressure-sensitive sheeting being applied to a flat surface which comprises a rigid cylindrical tube slotted throughout its length and having opposing slot edges, pressure bar means formed of compressible and deformable material of equal section throughout its length and protruding outwardly from the external surface of the tube, said compressible and deformable bar means extending the full length of the slot, said pressure sensitive sheeting upon having its roll end adhered to a flat wall surface that is to be covered therewith and smoothed thereover by the compressible and deformable pressure bar means is automatically and simultaneously made free of the backing strip upon movement of the applicator over the wall surface and with the pressure bar means forcing the severed pressure sensitive sheeting against the wall surface to smooth out the pressure sensitive sheeting as it is being adhered to the flat wall surface, said pressure sensitive sheeting being separable from the backing strip as the pressure sensitive sheeting is pulled over the slot edge from the wall surface upon the movement of the applicator with the compressible and deformable bar means over the wall surface and said compressible and deformable bar means including a sponge rubber-like compressible pressure bar and smooth flexible wear sheet covering enclosing the compressible pressure bar with its ends radially overlapping and joined to one another, said overlapping and joined free ends extending inwardly over the slot edge and joined to the internal face of the tube, whereby to provide a continuous smooth surface from the interior of the tube, over the slot face and the external sponge rubber-like compressible pressure bar protruding outwardly from the external surface of the tube.

3,861,989

METHOD OF MAKING MIRRORS HAVING RANDOMLY REFLECTIVE DECORATION

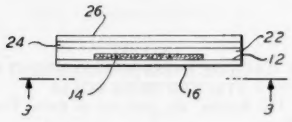
Sidney Ashenfarb, Roslyn; Marvin Weinblatt, Flushing, both of N.Y., and Leonard F. Glowzenski, Middletown, N.J., assignors to New Age Mirror And Tile Industries, Inc., Newark, N.J.

Filed Jan. 28, 1974, Ser. No. 437,088
Int. Cl. B44f *1/00, 3/00*
U.S. Cl. 161—4 **12 Claims**

1. A process for the formation of glass mirrors having a reflective decorative pattern thereon comprising the steps of: i. Applying to said glass surface a thin layer of a solvated mixture of Melamine Modified Orthophthalic Alkyd Resin and Epoxy Resin in a predetermined design, wherein the coating composition consists of **100** to **200** parts by weight of a first submixture consisting of:

a. A Melamine Modified Orthophthalic Alkyd Resin, 42–51%,
b. Pigment, 1 to 8%,
c. Lower monohydric alkanol,
d. Aromatic Hydrocarbon Solvent; b.p. 120° to 150°C to a total of 100%

and, 100 parts by weight of the second submixture consisting of:



e. Epoxy Resin, 48 – 53%,
f. Aromatic Petroleum Fraction, b.p. 180°–215°C,
g. Ethylene Glycol butyl Ether;

to a total 100%, and

ii. Curing said coated layer and applying a reflecting surface to said coated layer and the exposed portion of the glass on the side thereof bearing the coated layer.

3,861,990

EXTERIOR PARTS FOR A TIMEPIECE

Masami Kasai, Suwa, and Toshio Imai, Okaya, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Mar. 23, 1973, Ser. No. 344,388

Claims priority, application Japan, Mar. 27, 1972, 47-30583; Apr. 6, 1972, 47-33838; Apr. 21, 1972, 47-40108

Int. Cl. A44c *15/00*

U.S. Cl. 161—7 **7 Claims**

1. A decorative matrix comprising sintered fines of a naturally occurring rock material, said matrix being characterized by a hardness which exceeds that of an integral fragment of said naturally occurring rock material.

3,861,991

ARTIFICIAL AND AROMATIC FLOWER

Won Cheol Kim, 255-30 Yongdoodong, Dongdaemoon-ku, Seoul, South Korea

Filed Feb. 12, 1974, Ser. No. 441,922

Claims priority, application South Korea, July 28, 1973, 4352; July 28, 1973, 4548

Int. Cl. A41g *1/00*

U.S. Cl. 161—30 **1 Claim**

1. An artificial and aromatic flower kit comprising:

A. a flower base including stem, sepal and petal components, said sepal defining an inner reservoir;

B. a container for aromatic matter supported in said reservoir such that its neck and outlet end is substantially co-axial with said stem, sepal and petal components;

C. pistil and stamen components of said flower supported in said container and extending outwardly of said reservoir, as wick like distributors of said aromatic matter;

D. a supporting plate having a flower mounting bracket engaging said stem;

E. a transparent cover supported on said plate, and;

F. a plurality of closed aromatic containers with individual plugs with pistil and stamen components supported in said plugs for selective use with respective aromatic containers.

3,861,992

FLAME-RESISTANT TEXTILE FOUNDATION FABRIC

Frank H. DeNobriga, and Richard D. Neal, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1972, Ser. No. 268,968

Int. Cl. D03d *27/00;* **D04h** *11/00*

U.S. Cl. 161—67 **8 Claims**

1. Textile foundation fabric for use as a primary backing for tufted carpets, said fabric having a web-like structure weighing from about 1 to 10 ounces/square yard and comprising self-extinguishing flame resistant fibrous material overlaying and attached to the surface thereof from which face yarns will extend when tufted into said fabric to locate said web-like structure between said fabric and the free ends of said tufted face yarn to form a flame barrier between said foundation fabric and said face yarn.

3,861,993

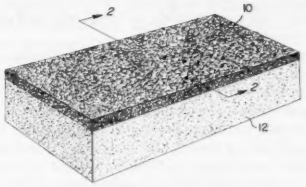
COMPOSITE FOAM SCOURING PAD

James L. Guthrie, Ashton, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 332,053, Feb. 13, 1973. This application Apr. 20, 1973, Ser. No. 353,190

Int. Cl. B32b *3/26*

U.S. Cl. 161—159 **20 Claims**



9. A scouring pad which comprises in combination, a non-reticulated hydrophilic foam layer and a reticulated hydrophilic foam layer, said reticulated hydrophilic foam layer having cells formed of a network of interconnected platelets, ribbons and strands and three-dimensional networks by reacting onto the non-reticulated hydrophobic foam layer a hydrophilic foam composition comprising a mixture of a first component comprising isocyanate capped polyoxyethylene polyol having a reaction functionality equal to about 2, a second component comprising aqueous reactant, and a third component comprising a crosslinked agent having a reaction functionality greater than 2, the ratio of moles H_2O/moles NCO groups being about 6.5 to about 390 in said second and first components respectively, and in the presence of a blowing agent and a nonionic surfactant so as to form said reticulated foam.

3,861,994

PACKING LAMINATE

Sven O. S. Stark, Rydsgard, Sweden, assignor to Tetra Pak Developpement SA, Lausanne, Switzerland

Filed Mar. 12, 1973, Ser. No. 340,456

Claims priority, application Switzerland, Apr. 28, 1972, 6358/72

Int. Cl. B32b *3/26, 5/18*

U.S. Cl. 161—161 **2 Claims**

1. A laminated package forming material comprising a layer of foamed polystyrene having a fine cellular structure, a density of 0.05 to 0.15 g/cm³ and a thickness of from 0.5 to 2 mm., a first homogeneous layer of a mixture of polystyrene and butadiene adhered to that side of said foamed layer for constituting the inside of the package, said first layer having a modulus of elasticity of from 14,000 to 20,000, a pick-up weight of

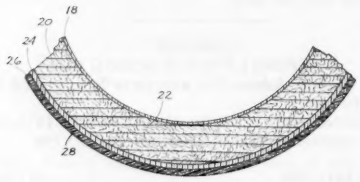
from 50 to 100 g/m² and a rupture elongation limit of between 10 and 100 percent and a second homogeneous layer essentially entirely of polystyrene adhered to the other side of said foamed layer for constituting the outside of the package, said second layer having a modulus of elasticity of from 30,000 to 50,000, a pick-up weight of from 30 to 80 g/m² and a rupture elongation limit of between 2 and 10 percent.

3,861,995

LIQUID IMPERMEABLE PLASTIC CASE

Charles W. Kellogg, Jr., Battleground, Wash., assignor to No-Korrod, Inc., Kirkland, Wash.

Filed Feb. 9, 1973, Ser. No. 331,213
Int. Cl. B32b *5/16*
U.S. Cl. 161—162 **12 Claims**



1. A liquid impermeable plastic case comprising:

a. an inner lamina providing an oil barrier and comprising a thermoset resin gel,

b. an intermediate lamina of substantial structural strength bonded to the inner lamina and comprising a thermoset resin reinforced with from 10-50% by weight of the intermediate lamina of fiberglass strands, and

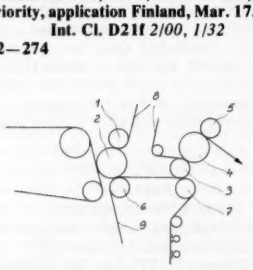
c. an exterior lamina providing a water barrier bonded to the intermediate lamina and comprising a thermoset resin admixed with from 10-50% by weight of the exterior lamina of thin glass flakes oriented substantially flat-wise with respect to the surface of the case in a multiplicity of layers.

3,861,996

PAPER WEB TRANSFER SYSTEM CARRYING THE WEB FROM FORMING WIRE TO PRESS SECTION

Gerhard Walter Dorfel, Weilheim/Tech., Germany, assignor to A. Ahlstrom Osakeyhtio, Noormarkhv, Finland

Filed Mar. 16, 1971, Ser. No. 124,766
Claims priority, application Finland, Mar. 17, 1970, 714/70
Int. Cl. D21f *2/00, 1/32*
U.S. Cl. 162—274 **1 Claim**



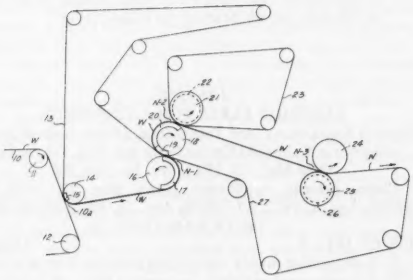
1. An improved press section in a web forming machine of the type having at least two traveling endless felts for contacting and carrying the web, which includes a pick-up roll urging a pick-up felt against the web for transferring the web to the felt, said pick-up felt passing around said pick-up roll and through a press nip for the pick-up felt defined between a press roll and said pick-up roll, a second press roll opposedly positioned to said pick-up roll and defining a second press nip between said pick-up roll and said second press roll through which the web, said pick-up felt and a support felt pass, the web being carried through said second press nip between said felts; a pair of further press rolls located at a distance from said pick-up roll, said pair of press rolls defining therebetween a third press nip through which said support felt and said web pass, the distance between said second press nip and said third press nip serving to eliminate slipping of the felt and stretching of the web; said support felt supporting the web between said second and third press nips; one roll of each of said second and third press nips constituting a guiding roll for said support felt, and roll means for separating the web from the felt after said third press nip.

3,861,997

PAPER MACHINE PRESS ARRANGEMENT WITH STACKED PRESS ROLLS

Donald A. Ely, Roscoe, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 21, 1972, Ser. No. 317,244
Int. Cl. D21f *3/04*
U.S. Cl. 162—360 **9 Claims**



1. In a paper making machine, the combination including:

a forming section;

a perforate first press roll immediately following said forming section;

a perforate second press roll forming a first nip with the first roll on the upper side of said first roll;

a third press roll forming a second nip with the second roll substantially opposite said first nip relative to the axis of said second roll;

a first felt for carrying a paper web extending horizontally from the forming section and engaging the bottom of the first roll, wrapping substantially 180° and threaded through said first nip with the web carrying side facing the second roll;

a suction gland within the first roll opposite the wrap of the first felt;

a second felt threaded through said first nip and wrapping the second roll continuously between said first and second nip and passing through the second nip with the web carried on the outer surface of the second felt between the first and second nip;

a suction gland within the second press roll opposite the second felt;

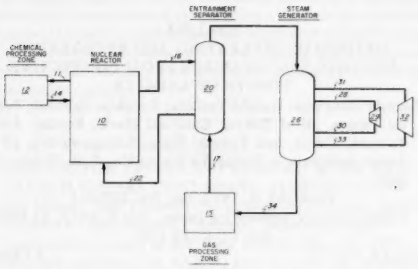
a roll couple forming a third press nip;

said second felt extending from the second nip to the third nip and carrying the web through the third nip.

3,861,998
METHOD OF OPERATING A NEUTRONIC REACTOR

Eugene H. Okrent, Bellevue, Wash., and Barry L. Tarmy, Berkeley Heights, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 55,423, July 17, 1970, abandoned. This application May 23, 1973, Ser. No. 363,041
Int. Cl. G21c 1/22
U.S. Cl. 176—37 7 Claims

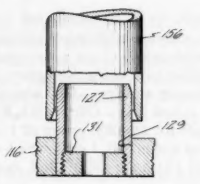


1. A process for operating a fluid molten salt graphite moderated nuclear breeder reactor comprising the steps of:
a. withdrawing fluid fuel from the reactor core;
b. introducing said withdrawn fuel in an entrainment zone;
c. contacting said fuel in said entrainment zone with a volatile purge material, said purge material being immiscible in and compatible with said fluid fuel, whereby volatile fission products are entrained by the purge material and are swept from the fuel with said purge material while heat is simultaneously transferred to the purge material from the fuel;
d. returning said fuel from the entrainment zone to the reactor core; and
e. introducing the purge material from the entrainment zone into a steam generator for producing steam.

3,861,999
NUCLEAR REACTOR ARRANGEMENT AND METHOD OF OPERATING SAFE EFFECTIVE TO INCREASE THE THERMAL AMARGIN IN HIGH POWER DENSITY REGIONS

Paul C. Zmola, and Royce J. Rickert, both of Bloomfield, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 630,986, April 14, 1967, abandoned. This application Nov. 13, 1968, Ser. No. 775,558
Int. Cl. G21c 15/02
U.S. Cl. 176—61 1 Claim

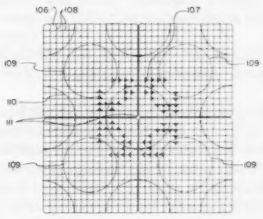


1. A nuclear reactor cooled by a moderating fluid comprising a plurality of longitudinally extending fuel element assemblies comprising the reactor core, one end of said fuel element assemblies in said core constituting a fluid inlet end, each of said fuel element assemblies having a predetermined cross section and having a plurality of longitudinally extending fuel elements therein, said fuel elements arranged in said fuel element assemblies in a regular predetermined lattice array with each fuel element occupying one lattice position, said fuel element assemblies further including a plurality of guide tubes extending longitudinally through said fuel element assemblies, the cross sectional area of said guide tubes being at least equivalent to the portion of the cross sectional area of said fuel element assemblies occupied by two of said fuel elements, and thus occupying portions of at least two lattice positions, said guide tubes having an open end communicating with said fluid inlet end and having lateral openings therethrough spaced well from said fluid inlet end whereby cooler fluid from said fluid inlet end may be conducted through said guide tubes past a first portion of the core and introduced through said openings into desired other portions of the core, flow restricting means of a first size in at least some of said guide tubes and flow restricting means of a second size in others of said guide tubes, said flow restricting means located at the fluid inlet end of said guide tubes whereby the amount of fluid flow through different guide tubes varies, and control elements comprising fingers each having a cross sectional area only slightly smaller than the cross sectional area of said guide tubes, said control element fingers adapted to fit into selected ones of said guide tubes and mounted so as to be movable longitudinally therein.

3,862,000
COOLANT MIXING VANES

Ralph A. Pugh; George A. Sofer, both of Richland, and Charles E. Leach, Benton City, all of Wash., assignors to Exxon Nuclear Company, Inc., Richmond, Wash.

Filed Aug. 31, 1972, Ser. No. 285,209
Int. Cl. G21c 3/34, 15/24
U.S. Cl. 176—78 9 Claims



1. In a liquid-cooled nuclear reactor core having a plurality of adjacent fuel assemblies which are polygonal in cross-section and have adjacent corners defining an intersection of said fuel assemblies, each of said fuel assemblies having a plurality of elongated fuel elements in parallel array held in position by upper and lower securing means and by fuel element spacers, each of said spacers having intersecting straps forming openings through which the elements longitudinally extend and coolant can flow in a longitudinal direction, and adjacent ones of said fuel elements at the intersections of said straps forming subchannels for the flow of coolant therethrough, wherein the improvement comprises:
each of said fuel assemblies including a plurality of coolant flow deflecting means mounted on at least some of the intersections of said straps of said spacers, a first plurality of said flow deflecting means arranged concentrically relative to said intersection of said adjacent corners of said adjacent fuel assemblies and oriented in the same circumferential direction for deflecting at least a portion of the longitudinal coolant flow transversely within each fuel assembly for producing a first concentric unidirectional substantially unrestricted vortex flow pattern of the coolant relative to the intersection of said adjacent corners of said adjacent fuel assemblies which transfers substantially all of the coolant deflected by said first

plurality of flow deflecting means in one of said fuel assemblies to a single adjacent one of said fuel assemblies and a second plurality of flow deflecting means arranged concentrically relative to the center of each of said fuel assemblies and oriented in the same circumferential direction for producing therein a second unidirectional substantially unrestricted vortex flow pattern of coolant relative to said center for effecting temperature averaging between high and low temperature regions of said adjacent fuel assemblies and within each assembly, the orientation of said first and second plurality of flow deflecting means being such that adjacent ones of the coolant flow vortices cooperate with each other to maintain established flow patterns.

3,862,001

HANDLING SYSTEM FOR A NUCLEAR REACTOR

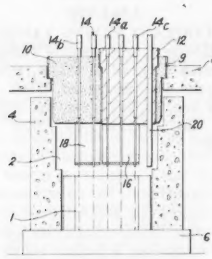
Pierre Marmonier, and Michel Sauvage, both of Aix-en-Provence, France, assignors to Commissariat a L'Energie Atomique, Paris, France

Filed Aug. 5, 1971, Ser. No. 169,348

Claims priority, application France, Aug. 14, 1970, 70.30088

Int. Cl. G21c *19/20*

U.S. Cl. 176—87 **1 Claim**



1. A handling system for a nuclear reactor having a reactor wall with an open top comprising two rotary plugs including a large plug which rotates relatively to the reactor wall closing the open top and, mounted in said large plug, a smaller rotary plug which is eccentric relative to said large plug and at least one fuel handling channel supported by said smaller plug, control rod passage mechanisms distributed in said large plug and in said smaller plug and a reactor core cover portion rigidly connected beneath each of said plugs within said wall, said control rod mechanisms being uniformly distributed in the assembly of said plugs and the diameter of said small plug being substantially half the diameter of said large plug.

3,862,002

PRODUCTION OF PHYSIOLOGICALLY ACTIVE PLACENTAL SUBSTANCES

George R. Sanders, El Cerrito, Calif., assignor to Sanfar Laboratories, Inc., El Cerrito, Calif.

Continuation-in-part of Ser. No. 193,152, May 8, 1962, abandoned. This application July 3, 1967, Ser. No. 650,822

Int. Cl. C12k *9/00*; A61k *17/00, 17/08*

U.S. Cl. 195—1.7 **4 Claims**

1. In a process for producing physiologically active substances, the steps comprising culturing viable placenta tissue in a culture medium at a temperature suitable to maintain viability and for a time period sufficient to provide an appreciable concentration of said substances in the culture medium, separating the culture medium containing said substances from said viable tissue, cooling the separated culture medium to about 5° C and acidifying the medium to a pH of about 3.5 to precipitate a glycoprotein fraction containing gonadotropin therefrom, separating the glycoprotein fraction containing the gonadotropin from the solution, contacting the residual culture medium with ether to extract fatty acids and steroid hormones therefrom, separating the ether phase from the culture medium phase, separating the fatty acids from said ether phase, and drying said ether phase to produce a residue including said steroid hormones.

3,862,003

METHOD OF SEPARATING AND RECOVERING MUCOPOLYSACCHARIDES FROM CONNECTIVE TISSUES OF ANIMALS

Takashi Okuyama; Keiichi Yoshida; Katukiyo Sakurai; Takashi Ogura, all of Tokyo; Katuyuki Horie, Sendai; Akira Tawada, Tokyo, and Tadashi Hara, Kanagawa-ken, all of Japan, assignors to Siekagaku Kogyo Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1972, Ser. No. 295,014

Claims priority, application Japan, July 5, 1972, 47-66695

Int. Cl. C12b *1/00*

U.S. Cl. 195—7 **4 Claims**

1. A method of extracting mucopolysaccharides from connective tissues of animals, which comprises extracting said connective tissues with water at a temperature of 105° to 150°C. under an elevated pressure, subjecting the extract to a protease treatment and/or alkali treatment, and then separating and recovering mucopolysaccharides from the aqueous phase.

3,862,004

METHOD FOR PRODUCTION OF CEPHALOSPORINS

Takeshi Takahashi; Yoshio Yamazaki, both of Osaka; Koichi Kato, Kobe, and Masao Isono, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

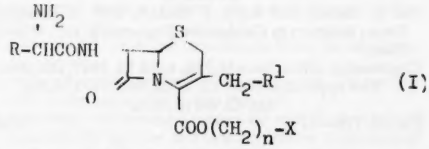
Filed May 31, 1973, Ser. No. 365,727

Claims priority, application Japan, Dec. 6, 1972, 47-122206

Int. Cl. C12d *9/00*

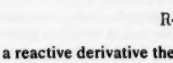
U.S. Cl. 195—29 **11 Claims**

1. A method for the production of a cephalosporin compound of the formula:



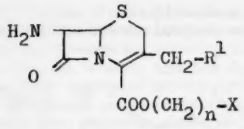
(I)

wherein R stands for a six-membered cyclic hydrocarbon residue which is either substituted or unsubstituted and either saturated or unsaturated, or an unsaturated five-membered heterocyclic residue containing one hetero atom in its ring; R^1 stands for a hydrogen atom or $-OR^2$ wherein R^2 is an organic group; n is 1 or 2; and X is $-OR^3$, $-SO_mR^3$, $-NH_2$ or $-CN$, wherein R^3 stands for an alkyl group of 1 to 3 carbon atoms or a phenyl group and m is 0, 1 or 2, which comprises subjecting a mixture of (1) an α-substituted -α-amino acid of the formula:



(II)

or a reactive derivative thereof wherein R has the same meaning defined above and (2) a 7-aminocephem compound of the formula:



(III)

wherein R^1, n and X have the same meaning as defined above in an aqueous medium to the enzymatic action of a microorganism which is capable of synthesizing a cephalosporin of the formula (I) from an α-substituted-α-amino acid of the formula (II) or its reactive derivative and a 7-aminocephem compound of the formula (III), the microorganism belonging to a family Pseudomonadaceae.

3,862,005

PROCESS FOR PRODUCING ALDONIC ACIDS AND STARCH SUGARS CONTAINING ALDONIC ACIDS

Toshio Miyake, and Yoshinori Sato, both of Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan

Continuation-in-part of Ser. Nos. 38,859, May 19, 1970, abandoned, and Ser. No. 43,584, June 4, 1970, abandoned. This application Sept. 26, 1972, Ser. No. 292,301

Claims priority, application Japan, May 20, 1969, 44-39005; June 6, 1969, 44-44370

Int. Cl. C12d *1/02*

U.S. Cl. 195—47 **7 Claims**

1. A process for preparing aldonic acids including maltotrionic acid from oligosaccharides containing maltose and maltotriose, comprising:

culturing dehydrogenase-productive strains of *Pseudomonas graveolens* or *Pseudomonas fragi* with aeration in a culture medium containing an aldose and sufficient nutrients for the growth of said strain;

separating the cells of said strain from said culture medium;

contacting said oligosaccharides with said separated cells with aeration without the further addition of a compound which acts as a hydrogen acceptor in the presence of a dehydrogenase enzyme and without the addition of nutrients necessary for the growth of said cells; and

recovering the aldonic acids produced in said contacting step.

3,862,006

PROCESS FOR PRODUCING YEAST CELLS

Shigeo Abe, and Yasuharu Yokote, both of Tokyo, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 27, 1972, Ser. No. 318,943

Claims priority, application Japan, Dec. 28, 1971, 46-105677

Int. Cl. C12d *1/00*; **C12b** *1/00*

U.S. Cl. 195—49 **6 Claims**

1. A process for producing yeast cells which comprises culturing a microorganism belonging to the species *Torulopsis methanosorba* in a culture medium containing methanol as the main carbon source, nitrogen source and inorganic source, and recovering yeast cells therefrom.

3,862,007

EXTRACTION OF CHITINASE

Wladimir A. Smirnoff, Quebec, Quebec, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Province of Ontario, Canada

Filed Mar. 15, 1973, Ser. No. 341,545

Int. Cl. C07g *7/026*

U.S. Cl. 195—66 R **9 Claims**

1. A method of extracting chitinase from the entrails of domestic fowl comprising:

a. contacting with dilute acid medium until the enzyme is dissolved;

b. adding colloidal chitin to the extract, collecting the resulting deposit, and washing the deposit;

c. allowing hydrolysis of the chitin in the deposit to proceed in dilute acid medium and removing any insoluble residue;

d. substantially saturating the solution with a neutral salt; and

e. recovering the precipitated chitinase material.

3,862,008

PROCESS FOR DEACETOXYCEPHALOSPORIN C.

Robert L. Hamill, New Ross, and Ramakrishnan Nagarajan, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 3, 1973, Ser. No. 421,303

Int. Cl. C12d *9/14*

U.S. Cl. 195—80 R **3 Claims**

1. A method for producing deacetoxycephalosporin C which comprises cultivating in an aqueous nutrient culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic fermentation conditions a streptomycete selected from the group consisting of *Streptomyces lipmanii* NRRL 3584 and *Streptomyces clavuligerus* NRRL 3585 until a substantial amount of antibiotic activity is produced by said streptomycete in said culture medium and isolating said deacetoxycephalosporin C from said culture medium.

3,862,009

DETERMINATION OF TRIGLYCERIDES

August Wilhelm Wahlefeld, Weilheim, Obb; Hans Mollering, Tutzing, Obb; Wolfgang Gruber, Garatshausen NR.; Erich Bernt, Munich, and Peter Roeschlau, Tutzing, Obb, all of Germany, assignors to Boehinger Mannheim GMBH, Mannheim, Germany

Filed May 30, 1973, Ser. No. 365,355

Claims priority, application Germany, June 19, 1972, 2229849

Int. Cl. C07g *7/02*; **C12k** *1/00*

U.S. Cl. 195—103.5 R **17 Claims**

10. Method for the determination of triglycerides by enzymatic saponification, which method comprises saponifying a sample containing triglycerides with a saponification agent comprising a lipase obtained from *Rhizopus arrhizus*, carboxylesterase and an alkali metal or alkaline earth metal alkyl sulfate, wherein the alkyl radicals are of from 10 to 15 carbon atoms, and measuring the liberated glycerol.

3,862,010

METHOD OF HEAT FRACTIONATING LDH INTO ISOENZYME COMPONENTS

Robert L. Rush, Spring Valley; Anne C. Delea, Yonkers; Milos Stastny, Ossining, and Edward D. Lash, Tarrytown, all of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed June 9, 1972, Ser. No. 261,500

Int. Cl. G01n *31/14*, *33/16*

U.S. Cl. 195—103.5 R **24 Claims**

1. A method for effectively determining LDH activity in a serum sample so as to diagnostically determine the existence and presence of diseased organs, comprising: mixing the serum sample with an aqueous buffer solution heating said serum sample-buffer solution mixture for a period of from 0.5 to about 5 minutes at a pH in the range from 7.6 to 10 at a temperature sufficient to fractionate the LDH, said aqueous buffer solution having an ionic strength sufficient to substantially inactivate particular isoenzyme molecules during heating, rapidly cooling the serum sample-buffer solution to a temperature at least below 37°C, and assaying said cooled sample for residual LDH activity at substantially said pH.

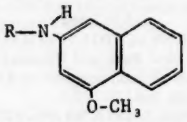
3,862,011
METHOD FOR QUANTITATIVELY DETERMINING ENZYME CONCENTRATIONS IN HOMOGENATES

Robert E. Smith, 4056 Peaceful Pl., Greenwood, Ind. 46142

Division of Ser. No. 172,280, Aug. 16, 1971, abandoned. This application June 18, 1973, Ser. No. 371,128
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R 6 Claims

1. A method for quantitatively determining enzyme concentrations in homogenates which comprises:

a. adding a substrate of the formula:



where R contains at least one amino acid group to an enzyme-containing homogenate, whereby hydrolysis of the substrate occurs;

b. after hydrolysis has continued for a time, photometrically determining the quantity of the 4-methoxy-2-naphthylamine formed by the hydrolysis;

c. adding to the hydrolyzed mixture of substrate and homogenate a dye-forming agent, whereby a dye is formed by the reaction of the dye-forming agent and the 4-methoxy-2-naphthylamine formed by the hydrolysis;

d. passing light of a given intensity through the preceding mixture; and

e. photometrically measuring the intensity of said light so that a comparison of the measured intensity with a standard curve can reveal the concentration of the enzyme originally in the homogenate.

3,862,012
QUANTITATIVE DETERMINATION OF URIC ACID

Harald Stork, Mannheim-Feudenheim, Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Germany

Filed July 17, 1973, Ser. No. 380,020
Claims priority, application Germany, Aug. 2, 1972, 22379404; May 25, 1973, 23267563
Int. Cl. C12k *1/00*; C07g *7/02*
U.S. Cl. 195—103.5 R 10 Claims

1. Process for the quantitative determination of uric acid in a sample suspected of containing same, which process comprises contacting said sample with a phosphate buffer, an NADH solution, ethanol, alcohol dehydrogenase, and catalase in the presence of air, wherein the ethanol concentration is from 0.3 to 0.7 volume percent of the resulting reaction mixture, whereby acetaldehyde is formed, and measuring a first extinction value, thereafter contacting the reaction mixture with uricase and measuring a second extinction value spectrophotometrically at 340 or 366 mu, and taking the difference between the extinction values as a measure of the initial uric acid content in said sample, wherein the process steps are carried out at a pH of from 6.3 to 7.1.

3,862,013
DEVICE FOR MAKING A CULTURE OF MICRO-ORGANISMS

Joseph F. Pagano, Paoli, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

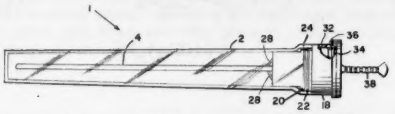
Filed May 24, 1973, Ser. No. 363,593
Int. Cl. C12b *1/02*
U.S. Cl. 195—139 3 Claims

1. A device for making a culture of micro-organisms comprising:

an elongated member,

a culture medium supported by said member, said culture medium having a multiplicity of openings extending inwardly from the surface and having a diameter of from about 0.1 mm to about 2.0 mm,

a container for the elongated member having an open end,



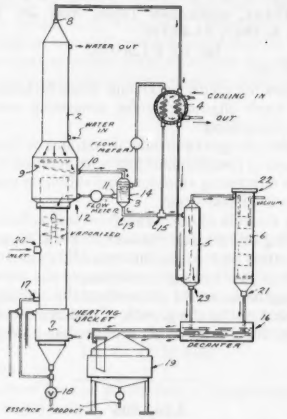
and

means to seal the open end of the container.

3,862,014
DISTILLATION APPARATUS FOR RECOVERING CITRUS ESSENCE

Cederic D. Atkins, and John A. Attaway, both of Winter Haven, Fla., assignors to State of Florida, Department of Citrus, Lakeland, Fla.

Division of Ser. No. 109,922, Jan. 26, 1971. This application Sept. 6, 1972, Ser. No. 286,790
Int. Cl. E01d *3/00*
U.S. Cl. 202—204 4 Claims



1. An apparatus for preparing citrus essence which comprises a vertical stripping column with overhead reflux condenser means disposed atop said column for returning condensibles to said stripping column and separating non-condensibles therefrom; said condenser means having an exit port means in the upper portion of said condenser for removing said non-condensibles, heater means disposed at the lower portion of the column, liquid collecting plate means located at the base of said condenser means and within said stripping column and side port for introducing citrus essence vapor; means for separating liquids of different densities operatively connected to receive and separate condensed liquids collected and removed from said liquid collecting means disposed at the base of said overhead condenser and means connecting to said separation means for continuously returning the more dense of said liquids to said stripping column at a point below the point at which condensed liquids are removed from the stripping column; a conduit operatively connected to an exit port in the upper portion of said overhead condenser for removing non-condensable vapors from said condenser and an exit port at the bottom of said stripping column for removing bottoms; scrubber means for contacting both the more dense and less dense liquids removed from said separator means with said non-condensable vapors from the overhead condenser, said scrubber means being operatively connected to an exit port

means in the bottom of said separator means for removing said more dense liquid and by a conduit means in the upper portion of the separator means for removing the less dense liquid contained therein, whereby said less dense and said more dense liquids are introduced into the top of said scrubber and said non-condensable gas are introduced to the bottom of said scrubber whereby a countercurrent scrubbing of said non-condensable gases is effected by said downward passing liquids; the scrubber also being provided with an exit port at its bottom portion for removing said liquids to a separating tank and an overhead exit port for removing upward flowing gases; said overhead exit port in said scrubber being further connected to the top of second condenser means for removing liquids entrained in said non-condensable gases; said second condenser means also having an exit port at its bottom for removing said entrained condensed liquids and a second overhead exit port for removing gases; the exit port at the bottom of the condenser being connected to the separating tank, and collection means connected with said separating tank.

3,862,015
QUENCHING TOWER FOR QUENCHING COKE AND SIMILAR MATERIALS, AND A QUENCHING DEVICE AS PART OF SUCH A TOWER

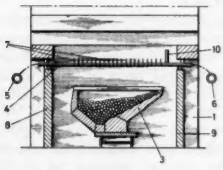
Johannes H. W. Ouwerkerk, Ijmuiden, Netherlands, assignor to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V., Ijmuiden, Netherlands

Filed Jan. 17, 1972, Ser. No. 218,418

Claims priority, application Netherlands, Jan. 28, 1971, 7101162

Int. Cl. C10b *39/08*

U.S. Cl. 202—227 **6 Claims**



1. In a quenching tower for receiving in the lower part thereof a quenching car loaded with coke or like material which is to be quenched therein, and having means for applying quenching water to the surface of the coke to effect a quenching thereof, the improvement of means for applying quenching water which comprises syphon tube means mounted in said tower above the space in which the car will be positioned for delivering the quenching water vertically downwardly in a multiplicity of narrowly restricted, compact jets of water in an essentially laminar pattern so that the water will be distributed uniformly over the entire layer of coke in the car, the pitch of said jets in said pattern being less than 25 cm between adjacent jets, said syphon tube means being mounted onto a grid of ducts extending transversely to the longitudinal direction of the tower with their respective delivery portions extending vertically downwardly, said transversely extending ducts being connected to the main tubes extending outside the tower.

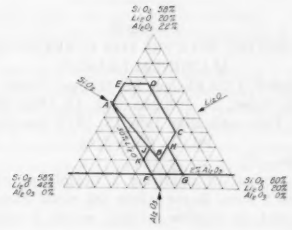
3,862,016
METHOD OF MEASURING SODIUM ION CONCENTRATION

Edwin P. Arthur, Fullerton, and Robert W. Nolan, Altadena, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 62,484, Oct. 13, 1960, abandoned, and a continuation-in-part of Ser. No. 106, Jan. 4, 1960, abandoned, which is a continuation-in-part of Ser. No. 813,895, May 18, 1959, abandoned. This application Feb. 28, 1972, Ser. No. 230,144

Int. Cl. G01n *27/36*

U.S. Cl. 204—1 T **2 Claims**



1. A method of measuring sodium ion concentration in a liquid also containing potassium ions comprising the steps of: contacting the liquid with a membrane of a glass electrode which membrane is essentially a lithia-alumina-silica glass of a composition falling within the area ABCDE of FIG. **1**; contacting the liquid with a reference half-cell; and determining the potential developed between the glass electrode and the reference half-cell as a measure of the sodium ion concentration in the liquid.

3,862,017
METHOD FOR PRODUCING A THIN FILM PASSIVE CIRCUIT ELEMENT

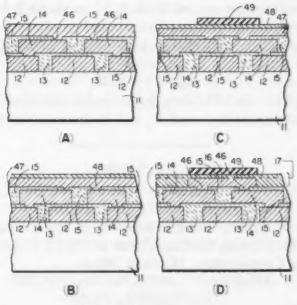
Hideo Tsunemitsu, and Hiroshi Shiba, both of c/o Nippon Electric Company, Limited, 7 15 Shiba Gochome, Tokyo, Japan

Division of Ser. No. 292,435, Sept. 26, 1972, abandoned, which is a continuation of Ser. No. 111,850, Feb. 2, 1971, abandoned. This application Apr. 24, 1973, Ser. No. 353,959

Claims priority, application Japan, Feb. 4, 1970, 45-10296

Int. Cl. C23b *5/48*; **H01l** *11/00*

U.S. Cl. 204—15 **8 Claims**



1. A method of producing a thin film resistor element comprising the steps of preparing a substrate in which at least two conductive wiring paths are embedded, said substrate having

an insulating surface thereon; opening at least two apertures in said insulating surface to respectively expose a portion of the surface of each of said two conductive wiring paths; depositing a metallic film having a substantially uniform thickness over the surface of said substrate and said exposed portions, said metallic film being of a metal of high resistivity selected from the group consisting of tantalum, titanium, molybdenum, and niobium; anodically oxidizing said metallic film to convert the surface of said metallic film into the oxide of said metal; and thereafter anodically oxidizing a predetermined portion of said metallic film to convert the remaining thickness of said metallic film into the oxide of said metal except for a predetermined resistor portion in contact with the previously exposed portions of the surfaces of said two conductive wiring paths.

3,862,018

RIGIDIZING PROCESS FOR SCREENS WITH ALUMINUM FRAMES

Pat F. Mentone, 1756 Eleanor St., St. Paul, Minn. 55116

Division of Ser. No. 198,396, Nov. 12, 1971, Pat. No. 3,752,187. This application June 15, 1973, Ser. No. 370,326

Int. Cl. C23b *5/62*

U.S. Cl. 204—32 **1 Claim**

1. The method of rigidizing a flexible printing screen mounted on a metal frame where the metal frame contains aluminum and the flexible printing screen is stainless steel comprising:

a. cleaning the aluminum frame and the stainless steel screen;

b. immersing both the aluminum frame and the stainless steel screen in a zincating solution for approximately one minute to thereby ensure that enough zinc is plated onto the aluminum frame to cover the exposed area of the frame while the stainless steel screen remains uncovered; and

c. electroplating nickel on both the stainless steel screen and the zinc coated aluminum frame in a nickel sulfamate bath having a pH of approximately 5 until a nickel layer of 0.1 mil to 0.2 mil thickness is obtained on the screen to thereby produce a rigidized screen.

3,862,019

COMPOSITION OF ELECTROPLATING BATH FOR THE ELECTRODEPOSITION OF BRIGHT NICKEL

William E. Rosenberg, Strongsville, and William J. Saas, Fairview Park, both of Ohio, assignors to R. O. Hull & Company, Inc., Cleveland, Ohio

Filed Apr. 26, 1974, Ser. No. 464,558

Int. Cl. C23b *5/08, 5/46*

U.S. Cl. 204—49 **8 Claims**

1. A plating bath for the electrodeposition of nickel comprising, an aqueous acidic solution of at least one nickel salt and, as brightening agents, from 0.02 to about 0.5g/l of N-(3-sulfopropyl) inner salt and from 0.005 to about 0.02g/l of an acetylenic alcohol-ethylene oxide adduct of the general formula

$$R_1—C \quad C—R_2$$

where R_1 is hydrogen, hydroxymethyl, or 2-hydroxyethoxymethyl, and R_2 is 2-hydroxyethoxymethyl.

3,862,020

PRODUCTION METHOD FOR POLYCRYSTALLINE SEMICONDUCTOR BODIES

Lloyd M. Woerner, Tittabawassee Twp., cty. of Saginaw, and Cedric G. Currin, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 7, 1970, Ser. No. 95,732

Int. Cl. C04b *35/00*

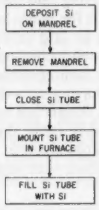
U.S. Cl. 264—81 **17 Claims**

1. The method of manufacturing solid bodies of semiconductor materials by chemical vapor deposition which comprises:

making a hollow cylinder of said semiconductor material,

closing the hollow in said cylinder at one portion along the length thereof with a cylindrical body of said semiconductor material having an axial length which is short in comparison to the length of said cylinder,

heating said cylinder with a cylindrical body of said semiconductor material having an axial length which is short in comparison to the length of said cylinder, and



directing a stream of heat decomposable gas containing said semiconductor material against the closure in said cylinder while said cylinder is heated to the decomposition temperature of said gas, whereby said semiconductor material is deposited on said closure and the adjacent walls of the hollow in said cylinder.

3,862,021

POLYMERIZABLE COMPOSITIONS AND LAMINATED ARTICLES BONDED

Takaeki Hagihara, Asaka; Haruo Sato, Niiza, and Shozo Sasaki, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 12, 1973, Ser. No. 331,414

Claims priority, application Japan, Feb. 17, 1972, 47-15966; Feb. 17, 1972, 47-15967

Int. Cl. B01j *1/10*

U.S. Cl. 204—159.15 **27 Claims**

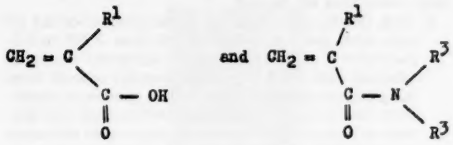
22. A polymerizable composition comprising:

I. about 100 parts by weight of an unsaturated polyurethane produced from a diisocyanate and an unsaturated esterdiol having an acid value of up to about 10, a number average molecular weight of from about 500 to 2,500 and containing about 1.2×10^{-4} to 3.8×10^{-4} mole of ethylenic double bond concentration per gram of said unsaturated esterdiol, said unsaturated esterdiol having been prepared by reaction between an alcoholic component comprising at least about 40% by weight of a stereohindered diol having a molecular weight of from about 90 to 400 and an acidic component comprising at least one unsaturated dicarboxylic acid, its anhydride or its methyl or ethyl ester and at least one saturated dicarboxylic acid, its anhydride or its methyl or ethyl ester, said sterically hindered diol being a member selected from the group consisting of 1,1-dimethyl-1,2-ethanediol, 1,2-dimethyl-1,2-ethanediol, 1,1,2,2-tetramethyl-1,2-ethanediol, 1-ethyl-1,2-ethanediol, 1-ethyl-2-methyl-1,2-ethanediol, 1-methyl-1,3-propanediol, 1-ethyl-1,3-propanediol, 2,2-dimethyl-1,3-propanediol, 2-methyl-2-ethyl-1,3-propanediol, 1,1,3-trimethyl-1,3-propanediol, 2,2-dimethyl-3-isopropyl-1,3-propanediol, 2-ethyl-3-propyl-1,3-propanediol, 1-methyl-1,4-butanediol, 2-ethyl-1,4-butanediol, 2,2-dimethyl-1,4-butanediol, 2-methyl-1,5-pentanediol, 2-methyl-2-propyl-1,5-pentanediol, 2-ethyl-1,6-hexanediol, 2,2,4-trimethyl-1,6-hexanediol, 1,2-cyclobutanediol, 1,3-cyclobutanediol, 1,3-cyclohexanediol, 1,4-cyclohexanediol, 1,3-dimethylol cyclohexane, 1,4-dimethylol cyclohexane, 4,4'-dicyclohexydiol, 4,4'-dicyclohexydiol, 4,4' -isopropylidene dicyclohexydiol, bis (beta-hydroxypropyl) terephthalate, bis (beta-hydroxypropyl) isophthalate, bis

(beta-hydroxypropyl) phthalate, bis (beta-hydroxyneopentyl) terephthalate, bis (beta-hydroxyneopentyl) isophthalate, bis (beta-hydroxy-neopentyl) phthalate, bis (beta-hydroxyethyl) isophthalate and bis (beta-hydroxyethyl) phthalate,

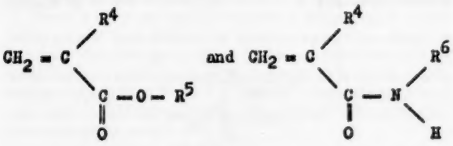
II. about 100 to 350 parts by weight of at least two ethylenically unsaturated monomers

A. one of said monomers comprising a compound selected from the group consisting of:

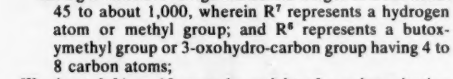


wherein R^1 and R^2 represent a hydrogen atom or methyl group respectively, and R^3 represents a hydrogen atom, alkyl group having 1 to 3 carbon atoms, hydroxymethyl or benzyl group,

B. the other of said monomers being present to the extent of from about 30 to 80% by weight of the monomers and comprising at least one compound selected from the group consisting of:



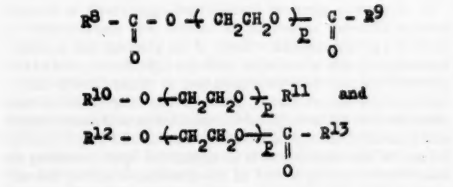
wherein R^4 represents a hydrogen atom or methyl group; R^5 represents an alkyl group having 1 to 8 carbon atoms, 3-chloro-2-hydroxypropyl, glycidyl, tetrahydrofurfuryl or oxyalkylene group of



having a number average molecular weight of from about 45 to about 1,000, wherein R^7 represents a hydrogen atom or methyl group; and R^6 represents a butoxymethyl group or 3-oxohydro-carbon group having 4 to 8 carbon atoms;

III. about 0.01 to 10 parts by weight of a polymerization initiator, and

IV. about 5 to 50% by weight, based on the total weight of the polymerizable composition, of at least one compound selected from the group consisting of:

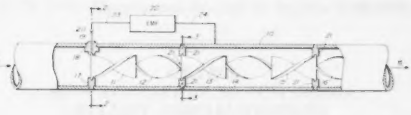


wherein R^8, R^9 and R^{13} represent a n-alkyl group having 1 to 5 carbon atoms or phenyl group respectively; R^{10}, R^{11} and R^{12} represent a hydrogen atom, n-alkyl group having 1 to 5 carbon atoms or phenyl group respectively; and *p* is an integer of 1 to 10.

3,862,022
ELECTROLYTIC CELL

Paul F. Hermann, Peabody, Mass., assignor to Kenics Corporation, Essex, Mass.

Filed Nov. 15, 1973, Ser. No. 415,969
Int. Cl. B01k *3/04; C23b 5/74*
U.S. Cl. 204—272 **9 Claims**



1. An electrolytic cell structure comprising:

a. a conduit through which a fluid electrolyte is adapted to flow;

b. an inner electrode structure comprising a plurality of curved sheet-like electrically conductive elements extending longitudinally within said conduit, each of said elements having a curvature to impart a transverse rotational component of flow to said electrolyte, said elements being arranged in alternating right- and left-handed curvature groups whereby said transverse rotational component is alternately reversed; and

c. an outer electrode structure, within said conduit, insulated from and surrounding said inner electrode along a substantial portion of its length.

3,862,023
ELECTRODE HAVING SILICIDE SURFACE

Harlan B. Johnson, Rittman, Ohio, assignor to PPG Industries Inc., Pittsburgh, Pa.

Filed Sept. 15, 1972, Ser. No. 289,700
Int. Cl. B01k *3/06;* **C01b** *7/06*
U.S. Cl. 204—290 F **2 Claims**

1. An electrode comprising a valve metal substrate having a coating thereon consisting of a platinum group metal silicide chosen from the group consisting of Pd_2Si, Pt_2Si, and Ru_2Si_3.

3,862,024
PREPARATION OF HIGH VISCOSITY INDEX LUBRICATING OIL

Dimitrios V. Favis, Sarnia, Ontario, Canada, assignor to Esso Research and Engineering Company

Filed May 8, 1973, Ser. No. 358,449
Int. Cl. C10g *41/00*
U.S. Cl. 208—46 **6 Claims**

1. A process for increasing the viscosity index of a petroleum hydrocarbon lubricating oil base stock having a viscosity within the range of 35 to 100 SUS at 210°F. and an original viscosity index of about 50 to 95 which comprises the steps of halogenating the said base stock to the extent of from 0.1 to 1 atom of halogen per average molecule of said base stock, and thereafter reacting the halogenated base stock with from 20 to 200 wt. percent of linear alpha olefin of from 2 to 40 carbon atoms in the presence of an alkylation catalyst of the Friedel-Crafts type.

3,862,025
MELT CRACKING FOR LUBRICATING OILS

Clellie T. Steele; Noel J. Gaspar, both of Sarnia, Ontario, and Laurence F. King, Mooretown, Ontario, all of Canada, assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Jan. 2, 1973, Ser. No. 320,318
Int. Cl. C10g *13/04*
U.S. Cl. 208—109 **18 Claims**

1. In a process for the production of lubricating oils, the steps of contacting a heavy hydrocarbon feedstock in a contacting zone with a regenerable molten medium and hydrogen,

said molten medium comprising a glass-forming oxide and an alkaline reagent selected from the group consisting of (a) a Group IA metal oxide, hydroxide, and mixture thereof, and (b) a Group IA metal oxide, hydroxide, and mixture thereof in combination with a Group IIA metal oxide, hydroxide, and mixture thereof, at a temperature in the range of from about the melting point of said medium to less than about 1200°F., for a time sufficient to form lighter hydrocarbons containing a substantial amount of lube oil components.

3,862,026
ADSORPTION OF N-PARAFFINS WITH GRAPHITE-ALUMINA PELLETS

Gordon Charles Friend, Richmond; Charles John Geach, Shepperton, and Aleksander Jerzy Groszek, London, all of England

Division of Ser. No. 289,835, Sept. 18, 1972,. This application Jan. 9, 1974, Ser. No. 431,975

Claims priority, application Great Britain, Sept. 28, 1971, 45046/71

Int. Cl. C07c *7/12*; **C10g** *25/00*

U.S. Cl. 208—310 **9 Claims**

1. A process for the separation of normal hydrocarbons, from mixtures with other hydrocarbons which comprises contacting a feed mixture containing normal hydrocarbons with graphite pellets consisting essentially of 50–80 percent by weight of a gas or vacuum ground graphite of surface area 50–2,000 square metres per gram and, as a binder, 6–50 percent by weight of alumina of pseudoboehmite structure of crystallite size less than 10 nanometres and of surface area 200–600 square metres per gram, to selectively adsorb the normal hydrocarbons.

3,862,027
PURIFICATION OF CLAY BY SELECTIVE FLOCCULATION

Venancio V. Mercade, Metuchen, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.

Continuation-in-part of Ser. Nos. 262,266, June 13, 1972, Pat. No. 3,826,365, and Ser. No. 76,219, Sept. 28, 1970, Pat. No. 3,701,417. This application Aug. 7, 1972, Ser. No. 278,474The portion of the term of this patent subsequent to Nov. 31, 1989, has been disclaimed.

Int. Cl. B03b *1/04*; **B03d** *3/06*

U.S. Cl. 209—5 **10 Claims**

1. A method for purifying kaolin clay containing finely divided particles of a titaniferous impurity which comprises dispersing said impure clay in water to form a neutral or alkaline deflocculated clay slip, incorporating a soluble compound containing polyvalent metal cations and a weakly anionic water-soluble synthetic organic polymeric flocculant, using a sufficient amount of said compound containing polyvalent cations to facilitate flocculation by said polymeric flocculant and sufficient polymeric flocculant to flocculate selectively the finely divided titania impurity, agitating the slip mildly until flocs form and settle to the bottom of the slip and separating the flocs from the slip.

3,862,028
FLOTATION-BENEFICIATION OF PHOSPHATE ORES

Duane A. Jones, Minneapolis, Minn., and Wesley A. Jordan, Denver, Colo., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 149,859, June 3, 1971, abandoned. This application Nov. 20, 1973, Ser. No. 417,645

Int. Cl. B03d *1/02*

U.S. Cl. 209—166 **5 Claims**

1. In a method of flotation-beneficiation of phosphate ores which normally includes the steps of:

a. floating the ore in the presence of tall oil fatty acids and No. 5 fuel oil;
b. collecting the first float;
c. removing the tall oil fatty acids and No. 5 fuel oil from the first float;
d. floating the first float in the presence of an amine collector; and
e. collecting the second float;

an improvement by which flotation is accomplished in a single stage, comprising the steps of:

a. froth floating phosphate ore in the presence of tall oil fatty acids and No. 5 fuel oil and from 0.025 to 0.2 pound/ton of ore of a graft polymer comprised of a starch substrate onto which is grafted a member selected from the group consisting of a polymerized quaternary ammonium derivative of aminotrialkyl methacrylate and mixtures of a polymerized quaternary ammonium derivative of aminotrialkyl methacrylate with polyacrylamide; and
b. collecting, filtering, and drying the resulting float.

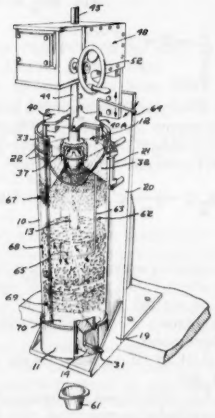
3,862,029
DENSITY GRADIENT FRACTIONATOR

John E. Joyce, 22 Nelson Rd., South Weymouth, Mass. 02190

Filed Oct. 1, 1973, Ser. No. 402,589

Int. Cl. B03b *3/46*

U.S. Cl. 209—172 **27 Claims**



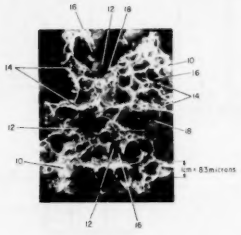
1. A density gradient fractionator comprising a vertical tubular chamber closed at its bottom and dimensioned to receive a predetermined volume of the gradient and a predetermined volume of a sample, with the light density end of the gradient on top, with sedimentation to occur therein in response to the earth's gravity, piston means reciprocable in said chamber, and a discharge tube connected to said piston means and extending through and slidably sealed with respect to the bottom of the chamber with its upper end open providing an overflow in the upper end of the chamber whereby the advance of the piston means, after sedimentation, forces the gradient and sedimented zones into said discharge tube, the lighter density end first.

23. The density gradient fractionator of claim 1 in which the fractionator includes a sample chamber above the gradient chamber and valve means operable to place the sample chamber in communication with the gradient chamber, the bottom level of the sample chamber being substantially in the same plane as said overflow.

3,862,030
MICROPOROUS SUB-MICRON FILTER MEDIA

Bruce S. Goldberg, Clifton, N.J., assignor to Amerace Esna Corporation, New York, N.Y.

Filed Dec. 13, 1972, Ser. No. 314,654
Int. Cl. B01d *39/00*
U.S. Cl. 210—24 32 Claims

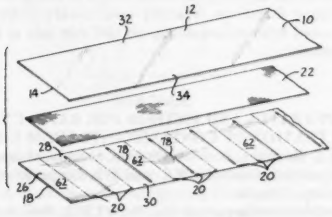


12. A composition processable into microporous submicron filter media comprising a mixture of a polymeric resinous binder, an inorganic filler, said filler being present in an amount by weight ranging from about 1 part per part of binder to about 2 parts per part of binder, a solvent, said solvent being present in an amount by weight ranging from about 1.5 parts per part of binder to about 3 parts per part of binder, and a non-solvent, said non-solvent being present in an amount by weight ranging from about 1 to about 1.3 times the amount of said solvent, said solvent comprising at least 30% of the total composition by weight.

3,862,031
MULTI-LAYER MEMBRANE TYPE MASS TRANSFER DEVICE AND PROCESS

Ronald James Leonard, Elk Grove Village, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation of Ser. No. 73,524, Sept. 18, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,024
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 5 Claims

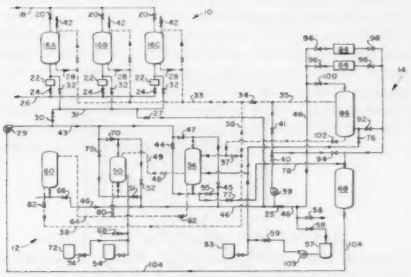


2. A mass transfer device which comprises a flexible semipermeable membrane folded to provide a plurality of membrane layers arranged for flow of a fluid in a plurality of parallel first flow paths and for flow of another fluid in a plurality of parallel second flow paths positioned between and separated from said first flow paths by said membrane, an integral backing folded and arranged on one side of said membrane for support thereof, said membrane being attached to the backing at lateral edges of said membrane by a tape member which is attached at opposite sides thereof to the backing and membrane respectively, the sides of said folded membrane layers opposite to the tape member being sealed together in leakproof manner with a bead of elastomeric sealant which also overlaps the lateral edges of the membrane to adhere to the tape member.

3,862,032
ION EXCHANGE WASTE WATER TREATMENT PROCESS

Donn Lewis Dixson, East Granby, Conn., and Bernard Anthony Roche, Springfield, Mass., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 17, 1973, Ser. No. 351,930
Int. Cl. B01d *15/06*
U.S. Cl. 210—33 21 Claims



1. In an ion exchanger treatment process wherein water is subjected to treatment by mixed anion and cation exchange resins in an ion exchange system, wherein said anion and cation exchange resins are subjected to a regeneration process in a regeneration system and wherein said regeneration process includes the steps of:

a. transporting exhausted anion and cation exchange resins with water from said ion exchange system to said regeneration system,
b. separating said anion and said cation exchange resins with water,
c. transferring said separated anion exchange resins with water to a position away from said cation exchange resins,
d. backwashing both said anion and said cation exchange resins,
e. regenerating said cation exchange resins with acid,
f. flushing residual acid from said cation exchange resins with water,
g. rinsing said cation exchange resins with water,
h. transferring said cation exchange resins to a mixing station with water,
i. regenerating said anion exchange resins with caustic,
j. flushing residual caustic from said anion exchange resins with water,
k. rinsing said anion exchange resins with water,
l. transferring said anion exchange resins to said mixing station with water, and
m. mixing said anion and said exchange cations resins at said mixing stations;

the process of treating and recovering waste water from said regeneration process in a waste processing system including the steps of:

aa. storing water from steps (h) and (l) for reuse in said regeneration process,
bb. filtering water from steps (a), (b), (c) and (d) and storing said filtered water for reuse in said regeneration process,
cc. providing ion exchange resins in said waste processing system, and
dd. contacting water from steps (g) and (k) with said provided ion exchange resins to remove dissolved solids and storing said contacted water for reuse in said regeneration process.

3,862,033

METHOD FOR SEDIMENTATION OF SOLID IMPURITIES FROM LIQUIDS

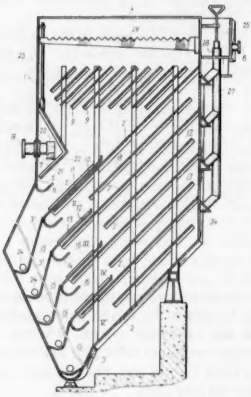
Jiri Rozkydalek, Brno, Czechoslovakia, assignor to Separa Brno, Inzenyrska Kancelar, Brno, Czechoslovakia

Division of Ser. No. 39,046, May 20, 1970, Pat. No. 3,687,298. This application July 17, 1972, Ser. No. 272,720

Claims priority, application Czechoslovakia, May 22, 1969, 3644-69

Int. Cl. B01d *21/10*

U.S. Cl. 210—49 4 Claims



1. A method of continuous sedimentation and separation of solids from a liquid stream comprising the steps of passing said stream successively through a series of independent stages operated under a common hydraulic pressure, causing said stream in each stage to follow successively a first path and then a second path, causing at least a portion of said solids to settle out in each of said stages leaving a clarified stream, removing a portion of the clarified stream in each stage after the settling of solids therein, and diverting a portion of the remaining clarified stream to the next succeeding stage and selectively regulating the removal of the clarified portion of said stream and the diverted portion of said stream from one stage to the next one, whereby the upward flow rate in successive stages is stepwise reduced, to a value which is no greater than the minimum sedimentation rate of the solids that have been separated in the preceding stage.

3,862,034

SLIME CONTROL COMPOSITIONS AND THEIR USE

Bernard F. Shema, Glenside, and Robert H. Brink, Jr., Doylestown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed June 15, 1973, Ser. No. 370,486

Int. Cl. A01n *9/02*; C02b *3/06*

U.S. Cl. 210—62 8 Claims

3. A method for controlling the growth of the microorganism Aerobacter aerogenes in an aqueous system which comprises adding to said system an effective amount of a composition comprised of N-2-nitrobutyl morpholine and 3,4', 5-tribromosalicylanilide, wherein the weight ratio of the morpholine to the anilide ranges from about 85:15 to about 5:95 respectively.

3,862,035

DEVICE FOR DECREASING DEPOSITS IN LIQUID FILTERS

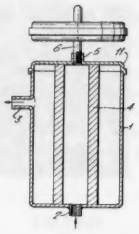
Geoffry Goodman, Kibbutz Amiad, Hevel Khorazim, Israel

Filed Mar. 5, 1973, Ser. No. 338,359

Claims priority, application Israel, Mar. 17, 1972, 39008

Int. Cl. B01d *35/22*

U.S. Cl. 210—79 5 Claims



1. In a filter for filtering solid contaminants from a liquid, including a housing having a contaminated liquid bottom inlet and a filtered liquid outlet, and filter means between said inlet and outlet for retaining the contaminants on one side thereof as the liquid passes through the filter means to the outlet, wherein the improvement in said filter comprises means, in combination therewith, for preventing the accumulation of solid contaminants on said filter means during filtration of said solid contaminants from said liquid comprising:

pressure reducing means containing sump means spaced from the top of said housing and communicating with said one side of said filter means, said pressure reducing means continuously discharging a portion of the liquid and solid contaminants from said housing at a pressure substantially less than the pressure in said housing, said pressure reducing means comprising at least one plate, said plate having a continuous groove on at least one face thereof, means for closing said groove to define a continuous liquid flow conduit, and aperture means extending through said plate and communicating said groove with said one side of said filter means, whereby the liquid must travel substantially the entire length of said groove before exiting therefrom, whereby solid contaminants are prevented from accumulating on said one side of said filter means.

3,862,036

APPARATUS AND METHOD FOR RAPID CYCLIC FILTRATION OF CONTAMINANTS FROM LIQUIDS

Phillip J. Simmons, Toronto, Ontario, Canada, assignor to Wix Corporation, Gastonia, N.C. and Wix Corporation Limited, Toronto, Canada

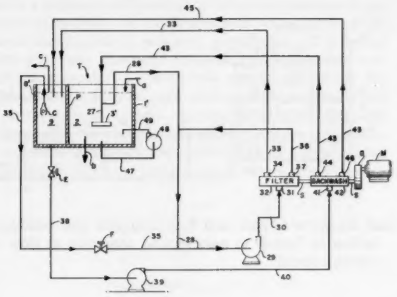
Continuation-in-part of Ser. No. 87,852, Nov. 9, 1970, abandoned. This application Mar. 9, 1973, Ser. No. 339,507

Int. Cl. B01d *29/38*

U.S. Cl. 210—82 31 Claims

30. A method of rapid cyclic filtering solid particles from a liquid and backwashing the filter and maintaining the solids in a substantially fluidized non-compacted bed comprising, disposing a filter media in a liquid having solids therein, pumping the liquid through the filter media to remove the solids, maintaining the solids in the liquid in a substantially fluidized non-compacted bed in front of the filter by maintaining the pumping of the liquid through the filter media for a first period of time of from about 0.0001 second to about 1.0 second, causing a reverse pumping of the clean liquid back through the filter media for a second period of time of from about 0.0001 second to about 1 second to clean the filter media, making the ratio of the first period of time to the second period of time substantially greater than 1:1, repeating the cycles and achiev-

ing a substantially clean filter media throughout the filtering operation by holding the solids in a substantially non-compacted bed in front of the filter media and obtaining a

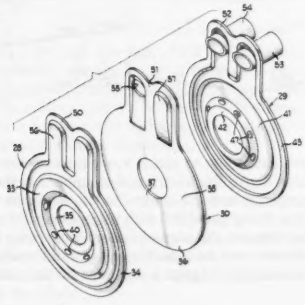


substantially continuous flow rate of liquid through the filter media approaching the flow rate of a clean liquid through a clean filter media.

3,862,037
FLUID DIVERTER DEVICE

Desmond McIntosh Donaldson, Milton, Ontario, and Gregory Stephen Trusxott Millard, Toronto, Ontario, both of Canada, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 16, 1973, Ser. No. 351,755
Int. Cl. B01d *35/18*
U.S. Cl. 210—152 **19 Claims**



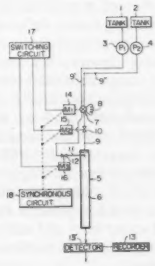
1. A fluid diverter device adapted to be disposed in a fluid flow path and to divert fluid to a fluid treating apparatus and return it to the flow path, comprising first and second oppositely disposed dished plates defining an annular hollow casing, said first plate having inlet means to take fluid into said casing and said second plate having outlet means for flow of fluid from said casing, a generally planar baffle plate disposed between and engaging said first and second plates and dividing said casing to provide spaced independent first and second annular fluid chambers on the opposite sides of said baffle plate respectively communicating with said inlet and outlet means, and first and second spaced conduit means, said baffle plate having means directing flow from said first annular chamber to said first conduit means and from said second conduit means to said second annular chamber, said first conduit means extending between said first annular chamber and said fluid treating apparatus for flow of fluid from said first chamber to said apparatus and said second conduit means extending between said fluid treating apparatus and said second annular chamber for flow of fluid from said apparatus to said second chamber.

2. A fluid diverter device adapted to be disposed in a fluid flow path and to divert fluid to a fluid treating apparatus and return it to the flow path, comprising first and second oppositely disposed dished plates defining an annular hollow casing, said first plate having inlet means to take fluid into said casing and said second plate having outlet means for flow of fluid from said casing, a baffle plate disposed between and engaging said casing plates and dividing said casing to provide spaced independent first and second annular fluid chambers respectively communicating with said inlet and outlet means, said first and second plates and said baffle plate having coextensive engaged tab portions, the tab portions of said first and second plates extending laterally from said annular chambers and overlying and being in spaced relation to said tab portion of said baffle plate to provide spaced first and second fluid passages respectively communicating with said first and second chambers, and spaced first and second conduit means respectively connected to said first and second fluid passages and to said fluid treating apparatus for flow of fluid from said first chamber to said apparatus and for flow of fluid from said apparatus to said second chamber.

3,862,038
LIQUID CHROMATOGRAPHIC SYSTEM

Seiji Takeuchi, Hitachi; Yoshinori Takata, and Kazunori Fujita, both of Ibaraki-ken, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Apr. 16, 1973, Ser. No. 351,501
Claims priority, application Japan, Apr. 17, 1972, 47-37715
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 C **26 Claims**



1. A liquid-chromatographic system comprising a column packed with a filler, a specimen supplying means for supplying a specimen to be separated, an eluent supplying means for supplying an eluent, said eluent eluting and developing said specimen within said column, a flow path change-over means connected with said specimen supplying device and said eluent supplying device for selectively supplying said specimen and said eluent to said column, an eluent guide tube having a first end communicated with said column and a second end connected with said flow path change-over means, a specimen introducing tube having a first open end penetrating into said filler in said column and a second end connected with said flow path change-over means, and a detecting means for detecting the eluted and developed specimen from said column.

3,862,039

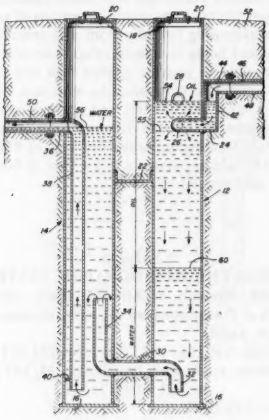
GRAVITY OIL-WATER SEPARATOR WITH TWO INTERCONNECTED SINGULAR CELLS HAVING AUTOMATIC FREE OIL DISCHARGE

Robert L. Summers, 5541 Twilight Rd., N.W., Roanoke, Va. 24019

Continuation-in-part of Ser. No. 345,696, March 28, 1973,. This application Sept. 17, 1973, Ser. No. 397,579

Int. Cl. B01d *17/02*

U.S. Cl. 210—252 **2 Claims**



1. A gravity separator comprising a tank assembly including side-by-side first and second tank components, said first tank component including an upper inlet opening thereinto at a level spaced below the upper end thereof, said second component including an upper outlet opening outwardly therefrom below the upper end thereof at generally the same level, said second component including means defining an upstanding lift passage in closed communication with the outlet opening at its upper end and opening downwardly into a lower interior portion of said second component at its lower end, and means defining a transfer passage having inlet and outlet ends communicated with a lower portion of the interior of the first component and the interior of the second component at a level spaced above the lower end of the lift passage, said first tank component including a free flowing oil outlet disposed at a level spaced slightly above said upper outlet, the upper ends of said first and second tank components including removable closures therefor, said upper inlet and said upper outlet opening through upstanding side wall portions of said first and second tank components.

3,862,040

SEPARATOR FOR LIQUIDS OF DIFFERENT DENSITIES

Paul Preus, Smith Rd., Toms River, N.J. 08753, and John J. Gallagher, 252 Burley Rd., Annapolis, Md. 21401

Filed Apr. 17, 1973, Ser. No. 352,021

Int. Cl. B01d *23/00*

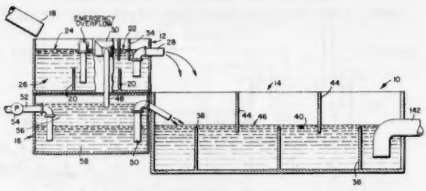
U.S. Cl. 210—253 **2 Claims**

1. A device for separating liquids of different densities in flow streams subjected to periodic increase above normal flow rate comprising:

a first separator for receiving and separating the liquids at said normal flow rate including means to conduct the liquids thereto:

a second separator for separating the liquids at flow rates above normal;

concentrating means having a bottom and including means for transmitting the less dense liquid with components of the more dense liquid separated by said first separator thereto, and means for separating and transmitting components of the more dense liquid from said concentrating means to said second separator;



and means to bypass said first separator and conduct the inflow of liquids to said second separator at flow rates above normal.

3,862,041

LIQUID SUSPENSION PURIFYING UNIT

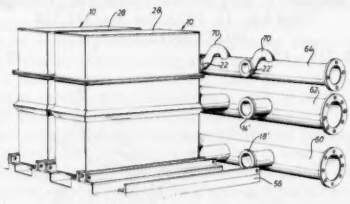
Klas Robert William Robinson, Lovangsvagen 37, Taby, Sweden

Filed Mar. 12, 1973, Ser. No. 340,185

Claims priority, application Sweden, Mar. 16, 1972, 3428/72; Aug. 25, 1972, 11078/72

Int. Cl. B04c *3/04*

U.S. Cl. 210—512 M **12 Claims**



12. A unit according to claim **9**, wherein a partition wall forming the ceiling of the elutriation chamber has the form of a plate arranged to be fixed to attachment means on the housing, the plate being provided with an opening for receiving said outflow element, the edge of said opening being folded or bent up to form a seat for a packing ring or like sealing means arranged to sealingly engage a shoulder of the outflow element.

3,862,042

SERUM/PLASMA SEPARATOR - PISTON WITH RED-CELL TRAPPING SURFACES

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Feb. 27, 1974, Ser. No. 446,391

Int. Cl. B01d *21/26*

U.S. Cl. 210—516 **5 Claims**

1. A self-contained fluid separator assembly capable of separating blood into its component parts of plasma or serum and cellular portion comprising:

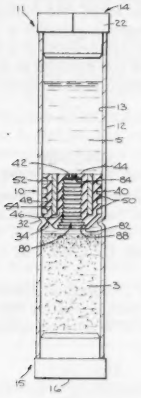
a. a container having at least one open end which is adapted to receive blood for subsequent separation into a light phase and a heavy phase;

b. a closure sealing the open end of the container, the closure being formed of a self-sealing elastomeric material which is penetrable by a cannula through which blood to be separated is conducted into the container;

c. a piston having a specific gravity relatively greater than the cellular portion of the blood and slidably mounted in the upper portion of the container and having means on

its lateral outer surface in sealing engagement with the inner surfaces of the container;

d. pressure responsive valve means associated with said piston, said valve means being normally closed when there is a pressure differential on different portions of the valve means below a predetermined value and which automatically opens in response to a pressure differential which is greater than said value so that when said container is subjected to moderate centrifugal force the blood separates into its light phase and heavy phase but the piston stays in the upper portion of the container, and subsequently when increased centrifugal force is used the valve means automatically opens with the light phase passing up through the valve means enabling the piston to



move down through the light phase while retaining sealing engagement with the inner surfaces of the container;

e. a throat within said piston leading from the lower surface thereof to said valve means, said throat having walls which are serrated with a series of ridges for trapping unwanted cellular material; and

f. mechanical stop means on the container whereby the piston when moving through the light phase will stop a predetermined distance from one of the ends of the container followed by termination of the differential pressure which permits the valve means to automatically shift from an open position to a closed position to provide an impervious barrier between the separated light phase and heavy phase of the blood.

3,862,043

POLLUTION CONTROL

Edward C. Haakenson, deceased, late of Corona, Calif. (Rose H. Haakenson, executrix), assignor to Rose H. Haakenson, Corona, Calif.

Filed Dec. 26, 1972, Ser. No. 318,382

Int. Cl. B01j *1/00*

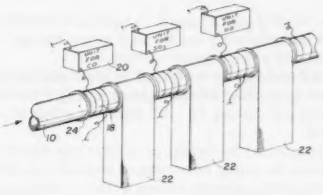
U.S. Cl. 250—527 **3 Claims**

1. Apparatus for selectively decomposing polluting exhaust gases of a vehicle engine into harmless gases which may be safely vented to the atmopshere or into disposable solids comprising:

a hollow tube which is adapted to be joined to an exhaust pipe of an engine,

a plurality of windings of electric coils, each mounted outside the tube, with said coil windings mounted side by side along the length of the tube,

means individually coupled to each coil winding to supply a selected high frequency electric signal to each coil, with each coil supplied by a different frequency of signal of a magnitude to cause decomposition of a particular component of the exhaust gas so that selected components of the exhaust gases may be individually decomposed as desired,



said hollow tube being vented at its outlet to the atmosphere, and said outlet tube being formed of an electrical insulating material.

3,862,044

SECONDARY RECOVERY COMPOSITION COMPRISING WATER, HYDROCARBON SOLVENT AND COLLOIDAL SILICA

Charles A. Christopher, Houston; Joseph C. Allen, Bellaire, both of Tex., and Jack H. Kolaian, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 239,388, March 29, 1972, Pat. No. 3,780,808. This application July 13, 1973, Ser. No. 379,152

Int. Cl. E21b *43/22*

U.S. Cl. 252—8.55 D **2 Claims**

1. A fluid comprising about 64 weight percent hexane, 35 weight percent water, 0.3 weight percent colloidal silica, 0.3 weight percent nonionic surfactant and 0.3 weight percent glycerine.

3,862,045

ANTISTATIC SOFTENING COMPOSITION

Toshio Sato; Mamoru Katsumi; Natsuko Tsuda, and Akira Yoshida, all of Wakayama, Japan, assignors to Kno Soap Co., Ltd., Chuo-ku, Tokyo, Japan

Filed Nov. 8, 1972, Ser. No. 304,859

Claims priority, application Japan, Nov. 15, 1971, 46-91342

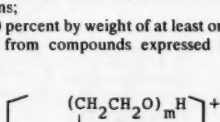
Int. Cl. D06m *13/46*

U.S. Cl. 252—8.75 **4 Claims**

1. An antistatic fabric softening composition comprising the following four ingredients (I) to (IV), and the balance consists essentially of water:

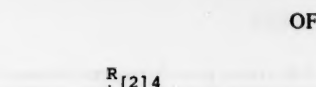
I. 4 – 10 percent by weight of a quaternary ammonium salt having two long-chain alkyl groups having 16 to 22 carbon atoms;

II. 0.5 – 3.0 percent by weight of at least one antistatic agent selected from compounds expressed by the following formula



wherein R_1 is an alkyl group having 14 to 22 carbon atoms, R_2 stands for an alkyl group having 1 to 3 carbon atoms or a benzyl group, X designates Cl, Br or $C_2H_5SO_4$, and the sum of *m* and *n* is from 5 to 20,

and compounds expressed by the following formula



wherein R_3 is an alkyl group having 16 to 22 carbon atoms, R_4 and R_5 stand independently for an alkyl group having 1 to 3 carbon atoms, and p is a number of from 1 to 4;

III. 0.5 – 2.0 percent by weight of at least one non-ionic surfactant containing an alkyl group having 8 to 18 carbon atoms and having 40 – 90 moles of ethylene oxide units; and

(IV) 2 – 10 percent by weight of at least one additive selected from the group consisting of alcohols having 1 to 3 carbon atoms, glycols having 2 to 3 carbon atoms, glycerol, sorbitol and urea.

3,862,046

STRENGTHENED AND HIGH DENSITY BATIO

Basil E. Walker, Jr., Oxon Hill, Md.; J. Richard Spann, McKlean, and Roy W. Rice, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 18, 1973, Ser. No. 361,710The portion of the term of this patent subsequent to Aug. 21, 1990, has been disclaimed.

Int. Cl. C04b *35/46*

U.S. Cl. 252—62.9 **4 Claims**

1. A barium titanate piezoelectric ceramic body consisting of:

at least about 0.1% by weight of an alkaline earth metal halide selected from the group consisting of BaF_2, CaF_2 and $SrCl_2$;

at least about 0.5% by weight MgO or La_2O_3; and

the balance $BaTiO_3$, said ceramic body exhibiting a higher average modulus of rupture than a $BaTiO_3$ ceramic body without said metal halide and MgO or La_2O_3.

3,862,047

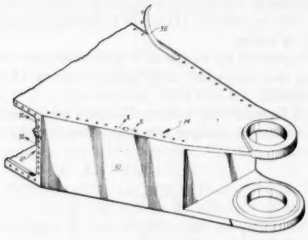
METHOD AND COMPOSITION FOR DETECTING FLAWS IN METALLIC SURFACES, HOLES AND OTHERWISE

Henry J. Weltman; Mark T. Carroll; John E. Halkias; William T. Kaarlela, and Jack D. Reynolds, all of Fort Worth, Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.

Division of Ser. No. 61,191, Aug. 5, 1970, abandoned. This application Apr. 26, 1972, Ser. No. 247,893

Int. Cl. H01j *1/28*

U.S. Cl. 252—62.52 **11 Claims**



1. A composition forming a room temperature vulcanizable casting material for precise visual inspection of magnetically inductive substances by application of the material directly to a workpiece to be inspected, solidifying in situ to elastic flexible form and removing the casting, for determining and permanently recording the presence of a flaw or flaws in the workpiece by migration of magnetizable particles in the composition to the flawed area when the workpiece and casting material are subjected to magnetic flux comprising:

a base formulation having

a. about 100 parts by weight silicone rubber compound, vulcanizable at room temperature by addition of suitable catalyst material thereto, and comprising a substantially linear polydimethyl siloxane

b. about 0.1 to 10.0 parts by weight of ferromagnetic particles in the size range of from about 5 to about 60 microns;

c. a liquid naphtha hydrocarbon diluent in an amount sufficient to adjust viscosity of the formulation to within a range of about 1 to about 120 poises; and

about about 0.2 to about 6 parts by weight per 100 parts of said base formulation of a catalyst comprising a metallic soap for vulcanizing said silicone rubber compound to said flexible elastic form; said rubber differing in color from said ferromagnetic particles to provide visual contrast between said composition as a whole and an accumulation therein of said particles at the area of a detected flaw when said composition is cured or vulcanized.

3,862,048

FUNCTIONAL FLUID COMPOSITIONS

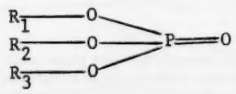
Martin B. Sheratte, Reseda, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed May 1, 1972, Ser. No. 249,413

Int. Cl. C09k *3/02*

U.S. Cl. 252—78 **27 Claims**

1. A functional fluid composition consisting essentially of a base stock, said base stock consisting essentially of a mixture of about 35 to about 85% of a phosphate ester having the general formula:



wherein R_1, R_2 and R_3 are each a member selected from the group consisting of aryl, alkaryl, alkyl of from about 3 to about 10 carbon atoms, and alkoxyalkyl having from about 3 to about 8 carbon atoms, and about 15 to about 65% of a dicarboxylic acid ester selected from the group consisting of the alkyl diesters of adipic and sebacic acid, containing alkyl groups of from about 4 to about 12 carbon atoms, and an alkyl diester of phthalic acid containing alkyl groups of from about 4 to about 12 carbon atoms, and mixtures thereof; and a small amount of an organic iodo compound sufficient to enhance the autoignition temperature of said base stock, said iodo compound being selected from the group consisting of aryl and alkaryl mono, di and triodides, said aryl and alkaryl radicals containing from about 6 to about 15 carbon atoms.

3,862,049

DETERGENT COMPOSITION CONTAINING BLEND OF MIXED FATTY ACID DERIVATIVES

Carol Beverley McGrath, and John Warren Scanlon, both of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jan. 24, 1973, Ser. No. 326,317

Claims priority, application Great Britain, Jan. 28, 1972, 72/4181

Int. Cl. C11d *13/00*

U.S. Cl. 252—108 **3 Claims**

1. A blend of fatty acids which blend is suitable for use in the form of a soap as an ingredient of a controlled sudsing fabric washing detergent composition and which blend consists of by weight:

a. From about 31.7 to about 40% of saturated fatty acids containing less than 16 carbon atoms,

b. From about 28.1 to about 32.3% of saturated fatty acids containing from 16 to 18 carbon atoms,
c. From about 14.4 to about 16% of saturated fatty acids containing more than 18 carbon atoms, and
d. From about 17.5 to about 20% of unsaturated fatty acids containing on average more than about 16 carbon atoms.

3,862,050
SODIUM ALKYL ETHER SULFATE 1C 12–C 14 SOAP BLENDS FOR OPTIMUM SUDSING IN HARD SURFACE CLEANERS

Harry J. Aubert, Center Twsp., Dearborn County, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 30, 1971, Ser. No. 158,596
Int. Cl. C11d *9/12, 9/32, 9/46*
U.S. Cl. 252—117 **7 Claims**

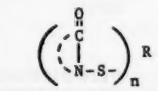
1. A hard surface cleaning composition characterized by sudsing and stability properties consisting essentially of from 1% to 20% by weight of an alkyl ether sulfate of the formula $R—O(CH_2—CH_2—O)_x—SO_3M$ wherein R is alkyl of from 10 to 16 carbons, x has an average value of from 2 to 4 and M is a water-solubilizing cation selected from the group consisting of alkali metal, ammonium, and substituted ammonium; and from 0.5% to 5% of an alkali metal soap selected from the group consisting of alkali metal soaps containing 12 carbon atoms, alkali metal soaps containing 14 carbon atoms, mixtures of alkali metal soaps, said mixtures containing at least 92% of a soap containing 14 carbon atoms, and mixtures of alkali metal soaps, said mixtures containing at least 93% of a soap containing 12 carbon atoms; and the balance water; said alkyl ether sulfate and alkali metal soap being in the ratio of from 1:1 to 30:1.

3,862,051
COMPOSITION OF POLY(THIOAMIDES) AND ACCELERATOR

Aubert Yaucher Coran, and Joseph Edward Kerwood, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

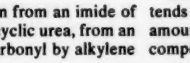
Division of Ser. No. 113,633, Feb. 8, 1971, Pat. No. 3,775,428, and a continuation-in-part of Ser. No. 80,815, Oct. 14, 1970, abandoned, said Ser. No. 113,633, Continuation-in-part of Ser. No. 704,186, is a division of Ser. No. 646,202, June 15, 1967, abandoned, which is a continuation-in-part of Ser. No. 579,493, Sept. 15, 1966, abandoned, which is a continuation-in-part of Ser. No. 549,730, May 12, 1966, abandoned, and a continuation-in-part of Ser. No. 459,466, May 27, 1965, abandoned, said Ser. No. 80,815, Division of Ser. No. 704,186. This application Aug. 2, 1972, Ser. No. 277,331
Int. Cl. C08c *11/59;* **C08d** *9/00*
U.S. Cl. 252—182 **13 Claims**

1. An accelerator-inhibitor composition consisting essentially of a diene rubber organic vulcanization accelerating agent in an amount effective to accelerate vulcanization of a vulcanizable diene rubber and an inhibitor, in an amount effective to inhibit premature vulcanization of a vulcanizable diene rubber, selected from the group consisting of the formulas:

(a) 

wherein

is a radical derived by removal of hydrogen from an imide of a dicarboxylic acid, from a monocarbonyl cyclic urea, from an imide in which the nitrogen is linked to carbonyl by alkylene and from a monocarbonyl azole containing one other different hetero atom in the ring, n is 2, 3 or 4 and R contains 1–24 carbon atoms and is alkylene, arylene, cycloalkylene or residue of ester from mercapto lower fatty acid and polyhydric alcohol,

(b) 

wherein n and R have the same meaning as before, Y is hydrogen, lower alkyl, aryl or cycloalkyl and

represents N-(arylthio)-carbamoyl, N-(cycloalkylthio)carbamoyl, N-(alkylthio)carbamoyl, N-arylcarbamoyl, N-alkylcarbamoyl or N-cycloalkylcarbamoyl and

(c)

where R, Y and n have the same meaning as before, n' is 1 or 2, n' is 0 or 1, the sum of n' and n'' *being* 2 and X is alkyl, cycloalkyl or aryl.

3,862,052
HYDROGEN GENERATING COMPOSITIONS AND METHODS

Werner F. Beckert; Ottmar H. Dengel, both of Oxon Hill, Md., and Rodger W. McKain, Lima, Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 152,422, June 11, 1971, Pat. No. 3,734,863, which is a continuation-in-part of Ser. No. 872,419, Oct. 29, 1969, abandoned. This application Feb. 23, 1973, Ser. No. 335,390
Int. Cl. C01b *1/05*
U.S. Cl. 252—188.3 R **12 Claims**

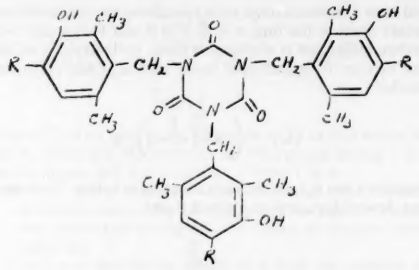
1. A composition capable of generating hydrogen gas comprising the intimate mixture in the solid state of at least one compound having the general formula $(N_2H_4)_nX_z$ wherein X is an inorganic acid group and n is the valency of said inorganic acid group and at least one compound having the general formula $Y(ZH_4)_m$ wherein Y is a mono- or divalent metal capable of forming complex hydrides and is selected from the group consisting of alkali metals and alkaline earth metals, m is the valency of said mono- or divalent metal and Z is a trivalent metal capable of forming complex hydrides and is selected from the group consisting of boron and aluminum wherein said compounds are present in about stoichiometric amounts or are present in amounts such that there is a stoichiometric excess of one of the components.

3,862,053
HINDERED TRIS (META-HYDROXYBENZYL)CYANURATE ANTIOXIDANTS

Peter Vincent Susi, Middlesex, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 199,340, Nov. 16, 1971, Pat. No. 3,723,427. This application Oct. 20, 1972, Ser. No. 299,565
Int. Cl. C07d *55/38;* **B01j** *1/16;* **C11b** *5/00*
U.S. Cl. 252—403 **5 Claims**

1. A composition comprising an organic material which tends to deteriorate upon exposure to oxygen containing, in an amount effective to inhibit oxidative degradation thereof, a compound of the formula:



wherein R is a branched chain alkyl containing three to about twelve carbon atoms.

3,862,054

ADSORBENT FOR PURIFYING VEGETABLE OILS FROM PHOSPHORUS CONTAINING COMPOUNDS

Dmitry Vladimirovich Sokolsky, prospekt Abaya, 31, kv. 38; Kair Akhmetovich Zhubanov, prospekt Abaya, 34, kv. 27; Ninel Fedorovna Shumateva, ulitsa Furmanova, 120, kv. 29; Evgeny Petrovich Mazin, ulitsa Spartaka, 14, kv. 4, and Aida Moiseevna Sokolskaya, prospekt Abaya, 31, kv. 38, all of Alma-ata, U.S.S.R.

Filed May 26, 1972, Ser. No. 257,402

Int. Cl. B01j *11/40, 11/06*

U.S. Cl. 252—455 R **3 Claims**

1. A process for preparing an adsorbent for purifying vegetable oils from phosphorus-containing compounds and free fatty acids by selective adsorption of said contaminants, comprising mixing a 10–20 percent aqueous solution of a metal salt selected from the group consisting of sulfates, nitrates, and chlorides of metals of Groups II and III of the Periodic Table, and mixtures thereof, with a 10–20 percent aqueous solution of an alkaline compound selected from the group consisting of soda, sodium hydroxide, potassium hydroxide and ammonia; depositing the resulting compounds selected from the group consisting of carbonates and hydroxides of said metals, with stirring, onto a filler in an amount of from 10 to 85 percent based on the total weight of the adsorbent and selected from the group consisting of alumina and a clay free from iron oxides; separating the filler with said compounds deposited thereon from aqueous solution to give a paste-like mass; adding thereto a binder, said binder being a cement which is heat-resistant at 500°C and above in an amount of 10 to 40 percent based on the total weight of the adsorbent, and water in an amount of 30 to 100 percent based on the weight of the cement; granulating the resulting mixture; drying the granules at a temperature of from 20° to 150°C, and calcining the granules at a temperature of from 300° to 500°C.

3,862,055

CATALYST PREPARATION

Jacobus J. M. G. Eurlings, Valkenburg; John W. Geus, Bilthoven, and Johannes H. Ottenheym, Sittard, all of Netherlands, assignors to Slamicarbon B.V., Geleen, Netherlands

Filed Mar. 23, 1973, Ser. No. 344,081

Claims priority, application Netherlands, Mar. 24, 1972, 7203934

Int. Cl. B01j *11/24*

U.S. Cl. 252—476 **7 Claims**

1. A process for the preparation of a catalyst system having a catalytically active component of an oxide, metal or alloy of at least one element selected from the group consisting of copper, zinc, cadmium, nickel, cobalt, iron, manganese or magnesium homogeneously dispersed onto a solid particulate inorganic thermostable carrier material, which process comprises:

a. forming an aqueous solution of a complex with an α-, β- or γ-amino acid, or an amino-sulphonic acid with at least one of said elements and adding urea and an alkali metal nitrite to the solution;

b. forming a suspension of said carrier material in said aqueous solution; and

c. while agitating said suspension, gradually and homogeneously generating hydroxyl ions within said suspension by the hydrolysis of the alkali metal nitrite and the urea at elevated temperatures, substantially in the absence of free ammonia, whereby said catalytically active component is precipitated onto said carrier material as opposed to forming free nuclei within the body of said solution.

3,862,056

SEMICONDUCTOR POLYMER COMPOSITIONS COMPRISING A GRAFTED BLOCK COPOLYMER OF SYNTHETIC RUBBER AND POLYOLEFIN AND CARBON BLACK

Paul F. Hartman, Wayne, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 34,558, May 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 780,165. Nov. 29, 1968, abandoned, which is a continuation-in-part of Ser. No. 690,758, Dec. 15, 1967, abandoned. This application Dec. 20, 1972, Ser. No. 317,020

Int. Cl. H01b *1/06;* **C08c** *11/18;* **C08f** *15/04*

U.S. Cl. 252—511 **9 Claims**

1. An electrically semiconductive polymer composition comprising electrically conductive carbon black in a polymer matrix comprising a grafted block copolymer of a synthetic rubber and a polyolefin selected from the group consisting of polyethylene, polypropylene, and polybutene-1, said synthetic rubber being present in the copolymer in an amount of from about 5 to 60 percent by weight, and said carbon black being present in the composition in an amount of from about 20% to about 30% by weight, based on the total weight of the carbon black and the polymer matrix.

3,862,057

MOLDING COMPOUNDS WITH EPOXY RESIN BASE

Heinz-Joachim Lindner, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed Nov. 15, 1972, Ser. No. 306,617

Claims priority, application Germany, Nov. 15, 1971, 2156700

Int. Cl. H01b *1/04;* **C08g** *51/04*

U.S. Cl. 252—516 **4 Claims**

1. Molding composition comprising:

a. 100 parts by weight of re-purified epoxy compound having a maximum chlorine content of 0.1% by weight and having more than one epoxy group, and being selected from the group consisting of polyglycidyl ethers of para,-para'-isopropylidenediphenol, diphenylolpropane, diphenylolmethane and oxyarylcarbon acids, and mixtures thereof;

b. between about 10 to 50 parts by weight of powdered filler material;

c. between about 5 to 50 parts by weight of amine hardener for said epoxy compound; and

d. between about 100 to 200 parts by weight of pure silicon carbide.

3,862,058

DETERGENT COMPOSITIONS CONTAINING A SMECTITE-TYPE CLAY SOFTENING AGENT

Joseph Peter Nirschl, and Robert Andrew Gloss, both of Cincinnati, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Nov. 10, 1972, Ser. No. 305,416

Int. Cl. C11d *3/10*

U.S. Cl. 252—528 **11 Claims**

1. A granular, built laundry detergent composition, comprising:

a. from about 2 percent to about 30 percent by weight of a non-soap synthetic detergent compound selected from the group consisting of anionic synthetic detergents, nonionic synthetic detergents, ampholytic synthetic detergents, zwitterionic synthetic detergents and mixtures thereof;

b. from about 10 percent to about 60 percent by weight of an organic or inorganic detergent builder salt;

c. from about 1 percent to about 50 percent by weight of a smectite-type clay softening agent having an ion exchange capacity of at least about 50 meg/100 g.; and

d. from about 0.5 percent to about 15 weight of a substantially water-insoluble quaternary ammonium anti-static agent of the formula $[R_2N^+R'_2]_nX^{n-}$, wherein each R is a hydrocarbyl group containing from about 10 to about 22 carbon atoms, each R' is a hydrocarbyl group containing from 1 to about 4 carbon atoms, X is an anion and *n* is an integer from 1 to 3, at a weight ratio of said smectite-type clay to quaternary ammonium anti-static agent of from about 40:1 to about 1:1;

said quaternary ammonium compound being in releasable combination in said composition.

3,862,059

COPOLYMERS OF DIALLYLDIALKYLAMMONIUM COMPOUNDS, ANION PERMOSELECTIVE MEMBRANES BASED THEREON AND PROCESS FOR PREPARING SAID MEMBRANES

Francesco Greco; Paolo Longi, both of Milan; Romano D'Angelo, Brugherio; Antonio Chiolle, Ferrara, and Lino Credali, Casalecchio, all of Italy, assignors to Montecatini Edison S.P.A., Milan, Italy

Filed May 4, 1973, Ser. No. 358,182

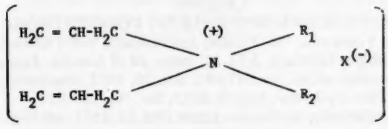
Claims priority, application Italy, May 10, 1972, 24171-A/72

Int. Cl. C08f 15/40

U.S. Cl. 260—2.1 C **12 Claims**

1. High molecular weight linear copolymers consisting essentially of, in chemically combined form:

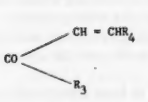
A. from 15 to 85 mol % of at least one diallyldialkylammonium compound of the formula



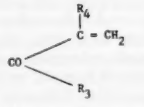
(I)

wherein R_1 and R_2 are independently selected from the group consisting of lower alkyl, halogen substituted lower alkyl and phenyl, and X is OH, a halogen or an inorganic or organic anion;

B. from 5 to 80 mol % of at least one alkenyl monomer having the formulae (II) or (III)



(II)



(III)

wherein R_3 and R_4 are independently selected from the group consisting of hydrogen, lower alkyl and halogen substituted lower alkyl; and

C. from 5 to 50 mol % of at least one halogen containing vinyl monomer selected from the group consisting of vinylidene chloride, α-chloroacrylonitrile and mixtures thereof;

said high molecular weight linear copolymers having an inherent viscosity, measured in dimethylformamide at 30°C. of between 0.1 and 2.5 dl/g.

3,862,060

PHENOLIC RESIN EMULSIONS COMPRISING A RESOLE RESIN AND A SOLUBLE PROTEIN

George J. Anderson, East Longmeadow, and Woodrow H. Ingram, II, Hampden, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 29, 1973, Ser. No. 410,853

Int. Cl. C08g 37/18; C08h 7/02

U.S. Cl. 260—7 **19 Claims**

1. A stable aqueous emulsion of a thermosetting phenol-formaldehyde resole resin comprising from about 80 to 99 parts by weight of phenol-formaldehyde resole resin and from about 1 to about 20 parts by weight of a proteinaceous compound per 100 parts by weight of solids; wherein the emulsion is characterized by having a solids content in the range of 45.1 to 70 percent, a pH in the range of 7 to 11, a particle size in the range of from 0.01 to 2.0 microns and an alkali metal hydroxide concentration of between about 0.005 and 5.5 percent; wherein the phenol-formaldehyde resole resin is produced by reaction of formaldehyde and a phenol in a mole ratio of from about 0.85:1 to about 3:1 in the presence of a catalyst selected from the group consisting of ammonia, hexamethylenetetramine and amines of molecular weight less than about 300; wherein the resole resin has a water tolerance of less than 40 percent, and wherein the proteinaceous compound is soluble in aqueous media at a pH of 7 to 10.

3,862,061

IMIDAZOLE DERIVATIVES

Gertrude B. Elion, Chapel Hill; Paulo M. S. DeMiranda, Raleigh, and Lowrie M. Beacham, III, Durham, all of N.C., assignors to Burroughs Wellcome Co., Triangle Park, N.C.

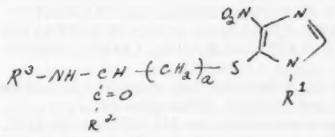
Filed Mar. 23, 1973, Ser. No. 344,270

Claims priority, application Great Britain, Mar. 24, 1972, 13901/72

Int. Cl. C07d 49/36

U.S. Cl. 260—112.5 **21 Claims**

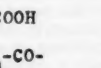
1. A compound of Formula I or a pharmaceutically acceptable salt thereof



(I)

wherein R^1 is a hydrogen atom, lower alkyl, or benzyl, R^2 is OR^5, NR^5 or an amide linked amino acid residue of the formula-NH—$(CH_2)_m$—C**O**O**H**, wherein *m* is 1or 2, R^5 is a hydrogen atom or lower alkyl, $R^3$is a hydrogen atom,

an amido linked amino acid residue of the formula



wherein *n* is 1 or 2, or

$$R^4\text{-}O\text{-}\overset{\overset{O}{\|}}{C}\text{-},$$

in which R^4 is t-butyl, benzyl or $CH_2{=}CH{-}$, and *a* is 1 or 2.

3,862,062

THERMOSETTING ACRYLIC POWDER OF AN ACRYLIC POLYMER HAVING LOW GLASS TRANSITION TEMPERATURE, CELLULOSE ACETATE BUTYRATE AND A CROSS-LINKING AGENT

Lee R. Harper, Media, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1972, Ser. No. 316,746
Int. Cl. C08b *21/08*
U.S. Cl. 260—15 **9 Claims**

1. A thermosetting acrylic powder coating composition comprising finely divided particles having a particle size of 1–100 microns; wherein the powder particles are an intimately mixed blend of film-forming constituents that consist essentially of

A. 50–80 percent by weight of an acrylic polymer consisting essentially of

1. 50–80 percent by weight, based on the weight of the acrylic polymer, of methyl methacrylate or styrene or a mixture of methyl methacrylate and styrene;
2. 10–35 percent by weight, based on the weight of the acrylic polymer, of an alkyl acrylate or an alkyl methacrylate or a mixture thereof each having 2–12 carbon atoms in the alkyl groups;
3. 10–40 percent by weight, based on the weight of the acrylic polymer, of a hydroxy alkyl acrylate or a hydroxy alkyl methacrylate each having 2–4 carbon atoms in the alkyl group;

wherein the acrylic polymer has a glass transition temperature of 50°C. to 70°C., a weight average molecular weight of 5,000–25,000 and is hydroxyl terminated;

B. 5–30 percent by weight of cellulose acetate butyrate having a viscosity measured according to ASTMD-1343-56 of 0.01–2 seconds and a butyryl content of 25–60 percent;

C. 5–19.95 percent by weight of an alkylated melamine formaldehyde resin having 1–8 carbon atoms in the alkyl group; and

D. 0.05–1.0 percent by weight of a blocked acid catalyst.

3,862,063

THERMOSETTING ACRYLIC POWDER OF AN ACRYLIC POLYMER HAVING A HIGH GLASS TRANSITION TEMPERATURE, CELLULOSE ACETATE BUTYRATE, A REACTIVE PLASTICIZER AND A CROSS-LINKING AGENT

Paul H. Pettit, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 310,952, Nov. 30, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 406,651
Int. Cl. C08b *21/08*
U.S. Cl. 260—15 **10 Claims**

1. A thermosetting acrylic polymer powder coating composition comprising finely divided particles having a particle size of 1–100 microns; wherein the powder particles are an intimately mixed blend of film-forming constituents consisting essentially of

A. 50–85 percent by weight of an acrylic polymer consisting essentially of

1. 70–97 percent by weight, based on the weight of the acrylic polymer, of methyl methacrylate, styrene or a mixture of a methyl methacrylate and styrene,
2. 1–10 percent by weight, based on the weight of the acrylic polymer, of an alkyl acrylate having 2–12 carbon atoms in the alkyl group or an alkyl methacrylate having 8–12 carbon atoms in the alkyl group,
3. 2–20 percent by weight, based on the weight of the acrylic polymer, of a hydroxyalkyl acrylate or hydroxyalkyl methacrylate having 2–4 carbon atoms in the alkyl groups;

wherein the acrylic polymer has a glass transistion temperature of about 71°–95°C. and a weight average molecular weight of 10,000–25,000;

B. 5–25 percent by weight of cellulose acetate butyrate having a viscosity of 0.005–2.0 seconds measured at 25°C. according to ASTM-D-1343-56 and having a butyryl content of about 30–60 percent by weight;

C. 4.98–25 percent by weight of an alkylated melamine formadehyde resin having a ratio of $-CH_2OR$ groups to $-CH_2OH$ groups at least 5:1 where R is an alkyl group having 1–8 carbon atoms;

D. 5–15 percent of dihydorxy functional plasticizer having a number average molecular weight of about 520–4,000; and

E. 0.02–5.0 percent by weight of an acid catalyst blocked with a blocking agent.

3,862,064

MOULDING COMPOSITIONS CONTAINING UNSATURATED AND SATURATED POLYESTERS, CELLULOSE ESTER AND MONOMERIC MATERIAL

David Philip Fry, Llanishen, Wales, Great Britain, assignor to BP Chemicals International Limited, London, England

Filed Sept. 28, 1973, Ser. No. 401,599
Claims priority, application Great Britain, Oct. 6, 1972, 46287/72; Nov. 30, 1972, 55273/72
Int. Cl. C08g *39/10*
U.S. Cl. 260—16 **10 Claims**

1. An unsaturated polyester resin composition for sheet moulding compounds comprising (1) an unsaturated polyester, (2) a copolymerisable monomer, (3) a saturated liquid polyester obtained by esterifying a polyhydric alcohol with a polybasic acid, and (4) a cellulose ester of a fatty acid of up to 6 carbon atoms.

3,862,065

GRANULAR SILICONE MOLDING COMPOSITIONS

Kiyoshi Yokokawa, 787 Yanase; Jun Koizumi, 165-1 Gohara, and Shigeo Mizutani, 3-11-20, Isobe, all of Annaka, Japan

Continuation of Ser. No. 317,001, Dec. 20, 1972, abandoned. This application Aug. 9, 1973, Ser. No. 387,037
Claims priority, application Japan, Dec. 23, 1971, 46-10493
Int. Cl. C08f *19/14*
U.S. Cl. 260—18 S **10 Claims**

1. A granular silicone molding composition which consists essentially of

a. 100 parts by weight of an organosiloxane resin whose melting point as measured by Durran's mercury method is from 25°to 200°C, having per silicon atom an average of from 1.0 to 1.7 organic radicals directly bonded to the silicon atoms and containing at least 0.25% by weight of hydroxyl radicals directly bonded to the silicon atoms,

b. from 50 to 200 parts by weight of glass fibres having lengths subsequent to being mixed in the present composition of from 0.2 to 10 mm,

c. from 10 to 200 parts by weight of at least one powdery inorganic filler, and

d. a catalytic amount of a curing catalyst composed of a mixture of at least one member selected from the group consisting of organic acid salts of metals, and inorganic lead compounds, and at least one member selected from the group consisting of aliphatic acids, aromatic acids, and anhydrides thereof, or a mixture of at least one organic amine and at least one ammonium salt of an organic acid selected from the group consisting of acetic acid, propionic acid, butyric acid, lauric acid, palmitic acid, stearic acid, benzoid acid, and phthalic acid.

3,862,066

METHOD FOR MAKING RIGID VINYL CHLORIDE POLYMER COMPOUNDS

William M Reiter; James E. Cooper, both of Mentor, Ohio, and Walter J. Lilley, Mountain Lakes, N.J., assignors to Universal PVC Resins, Inc., Plainesville, Ohio

Continuation-in-part of Ser. No. 147,173, May 26, 1971, abandoned. This application Jan. 28, 1972, Ser. No. 221,799
Int. Cl. C08f *19/14*, *21/04*
U.S. Cl. 260—23 XA 41 Claims

1. In the method for making rigid vinyl chloride polymer compositions based on polyvinyl chloride resin obtained by polymerization of monomer in aqueous media in the presence of suspending agent using monomer-soluble initiator, and containing stabilizers, lubricants and at least one additive selected from the group consisting of pigments and polymer modifiers, the improvement which comprises, in combination

a. determining a desired level of conversion of monomer to polymer corresponding to a precise proportion of each additive to polymer produced, said desired level of conversion corresponding to a particular process pressure occurring during the polymerization,

b. conducting the polymerization of the monomer to the polymer in a polymerization vessel in the presence of additives comprising dissolved or dispersed lubricant and stabilizer, said stabilizer not being a short-stopping agent for the polymerization reaction, and at least one other additive selected from the group consisting of dispersed pigment and dispersed polymeric polymer modifier, adding said additives to the polymerization vessel before termination of the polymerization in amount calculated to incorporate each additive in the polymer in said precise ratio based upon the amount of polymer to be formed at a conversion level of monomer to polymer in the range of between 50 and 92 percent of the monomer charge, and

c. terminating the polymerization at said desired level of conversion by adding a short-stopping agent to said vessel at a point during the polymerization corresponding substantially to said particular process pressure, said addition of said short-stopping agent being subsequent to the addition of said lubricant, stabilizer and other additive so that the lubricant, stabilizer and said other additive are homogeneously incorporated into the polymer in a controlled, predetermined proportion.

3,862,067

FLEXIBLE ELECTROCOATING COMPOSITION DERIVED FROM A LOW MOLECULAR WEIGHT COPOLYMER OF STYRENE AND MALEIC ANHYDRIDE

John F. Motier, Secane, Pa., and Donald L. Marion, Wedgewood, N.J., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Apr. 13, 1972, Ser. No. 243,863
Int. Cl. C08f *19/14*, *21/04*
U.S. Cl. 260—23 S 12 Claims

1. An aqueous electrophoretic coating composition bath containing as the sole curable components:

a. an at least partially neutralized, partial ester of styrene-maleic anhydride copolymer resin esterified to about 12.5 to 67.5 percent with a saturated or olefinically unsaturated alkanol of about 12 to 30 carbon atoms, said styrene-maleic anhydride copolymer having a mole ratio of styrene to maleic anhydride of about 1:1 to 4:1, and a molecular weight of about 500 to 4,000, said partial ester copolymer having an acid number in the range of about 20 to 300 and being neutralized to the extent of about 20 to 120 percent based on the acid number of the partial ester copolymer, with a neutralizing agent selected from the group consisting of ammonia, lower alkyl amines having up to 5 carbon atoms per alkyl group, alkanol amines having up to 5 carbon atoms per alkyl group and alkali metals, and

b. an olefinically unsaturated fatty acid triglyceride, said triglyceride being a semidrying oil or drying oil and having an iodine value of greater than 90; wherein the oil is percent is present in an amount of 33 percent to 300 percent by weight with respect to the esterified styrene-maleic anhydride copolymer,

said partial ester and said triglyceride being present in an amount of 5 to 30 percent by weight of the total bath.

3,862,068

PRESSURE-SENSITIVE HOT-MELT ADHESIVES

Thomas E. Russell, Whippany, N.J., assignor to Flintkote Company, White Plains, N.Y.

Continuation of Ser. No. 741,231, June 28, 1968, Pat. No. 3,635,861. This application Mar. 31, 1971, Ser. No. 129,970The portion of the term of this patent subsequent to Jan. 18, 1989, has been disclaimed.
Int. Cl. C09j *3/26*
U.S. Cl. 260—27 5 Claims

1. A pressure-sensitive adhesive composition having instant room temperature tack, good cold flow resistance and good shear strength which comprises: as a first component from about 15% to about 50% of a polystyrene-polybutadiene-polystyrene or a polystyrene-polyisoprene-polystyrene block copolymer whose polystyrene blocks have molecular weights of from about 5,000 to about 125,000 and are from about 20% to about 80% by weight of said copolymer, and whose polybutadiene or polyisoprene blocks have molecular weights of from about 15,000 to about 250,000; as a second component from about 7% to about 30% of a rubber-extending petroleum oil that is paraffinic, naphthenic or aromatic and has a specific gravity of about 0.80 to about 1.00, a viscosity at 100°F. of about 100 to about 1,000 SSU, and is 90% distillates at about 700°F. to about 1,000°F.; as a third component from about 20% to about 60% of an ethylene glycol, polyethylene glycol, glycerol or pentaerythritol rosin ester, hydrogenated rosin ester or methylated rosin ester, a coumarone-indene resin having a molecular weight of about 150 to about 800, a poly(α-pinene) or poly(β-pinene) resin, a diene-olefin aliphatic hydrocarbon resin having a molecular weight of about 500 to about 1,800, or a homopolymeric polystyrene resin having a molecular weight of about 200 to about 6,000; and as a fourth component from about 5% to about 30% of a resinous atactic polypropylene having a molecular weight of about 15,000 to about 60,000, said percent values being by weight of said components in said composition.

3,862,069

MICROCRYSTALLINE POLYOLEFINS AND DISPERSIONS THEREOF

Mamerto M. Cruz, Jr., Pennington, N.J.; Nicholas Z. Erdi, New York, N.Y., and Orlando A. Battista, Yardley, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 231,399, March 2, 1972, abandoned, which is a continuation of Ser. No. 49,174, June 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 714,754, March 21, 1968, abandoned. This application Sept. 17, 1973, Ser. No. 397,733
Int. Cl. C08f *45/52*, *3/10*
U.S. Cl. 260—28.5 A 6 Claims

1. As an article of manufacture, thermal-oxidatively degraded, substantially atactic-free, mechanically disintegrated microcrystalline polyproplene resin in the form of finely-divided, discrete microcrystalline particles at least about 5 percent by weight having a particle size not exceeding one micron and in contrast to its precursor polyolefin resin having a molecular weight of about 1/10 that of the precursor resin and exhibiting a sharper X-ray diffraction pattern and two separate melting point ranges as demonstrated in the differential scanning calorimetry procedure as described herein and being further characterized in forming a stable dispersion in a liquid medium having a minimal swelling action on said resin particles which may solvate some of the surface of the parti-

cles without destroying the interior crystallinity of the particles.

3,862,070

ACRYLIC SYNTHETIC FIBERS HAVING INCREASED FLAME RETARDANCE AND METHOD OF PRODUCING SAME

Toshihiko Fukushima, Akashi; Shunichiro Kurioka, Kobe, and Masahiko Morimoto, Nishiwaki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

Filed Oct. 11, 1973, Ser. No. 405,319

Claims priority, application Japan, Oct. 18, 1972, 47-104666

Int. Cl. C08c *11/70*

U.S. Cl. 266—28.5 A **14 Claims**

1. An acrylic synthetic fiber having an increased flame retardance consisting essentially of

A. fiber forming copolymer consisting essentially of 20 to 90 weight percent acrylonitrile, 80 to 10 weight percent vinyl chloride and 0 to 30 weight percent ethylenically unsaturated compound copolymerizable with acrylonitrile or vinyl chloride, and

B. 0.5 to 30 weight percent, based on the weight of said fiber forming copolymer, of a flame retarding additive comprising a magnesium compound selected from the group consisting of magnesium monoxide, magnesium hydroxide, magnesium carbonate and mixtures thereof.

3,862,071

AQUEOUS THERMOSETTING ACRYLIC ENAMEL CONTAINING METALLIC FLAKE PIGMENT

James Di Carlo, Philadelphia, Pa., assignor to E. I. duPont deNemours and Company, Wilmington, Del.

Filed May 15, 1973, Ser. No. 360,583

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.4 UA **7 Claims**

1. In an aqueous thermosetting acrylic enamel coating composition comprising 10–60% by weight of film-forming constituents and correspondingly 89.75–39% by weight of water and up to 20% by weight of a solvent for the film-forming constituents and 0.25–1% by weight of a uniformly dispersed aluminum flake pigment; the film-forming constituents consist essentially of

1. 59.5–85% by weight, based on the weight of the film-forming constituents, of an acrylic polymer of which 30–50% by weight of the polymer is dispersed and the remainder dissolved in the composition, the dispersed polymer having a particle size of 0.01–0.10 microns, said polymer having a uniformity factor of at least 75% carboxyl to hydroxyl ratio of 1:0.2 to 1:1.8, an acid number of about 35–150, a molecular weight of 5,000–80,000 and consists essentially of

a. 20–60% by weight, based on the weight of the acrylic polymer, of a hard constituent which is either methyl methacrylate, or a blend of methyl methacrylate and styrene wherein the styrene comprises up to 40% by weight of the acrylic polymer;

b. 20–40% by weight, based on the weight of the acrylic polymer, of a soft acrylic constituent that is either an alkyl acrylate having 2–12 carbon atoms in the alkyl group, an alkyl methacrylate having 4–12 carbon atoms in the alkyl group, or a mixture of the above acrylate and methacrylate;

c. 4–20% by weight, based on the weight of the acrylic polymer, of a hydroxy-containing constituent which is either a hydroxyalkyl methacrylate or a hydroxyalkyl acrylate or a mixture thereof in which the alkyl groups have 2–4 carbon atoms,

d. 4–20% by weight, based on the weight of the acrylic polymer, of α,β-unsaturated carboxylic acid;

2. 10–40% by weight, based on the weight of the film-forming constituent, of a water dispersible alkylated melamine formaldehyde resin having 1–4 carbon atoms in the alkyl groups; and the composition is at least partially neutralized with a water-soluble amine and has a pH of about 6–9;

the improvement comprising

0.5–5% by weight, based on the weight of the film-forming constituents, of an acrylic copolymer having a weight average molecular weight of about 2,500 to 45,000 and consisting essentially of

75–95% by weight, based on the weight of the acrylic copolymer of an alkyl acrylate having 1–8 carbon atoms in the alkyl group and

5–25% by weight, based on the weight of the acrylic copolymer, of acrylic acid or methacrylic acid.

3,862,072

THERMOSETTING AQUEOUS COATINGS CONTAINING BRANCHED HYDROXY FUNCTIONAL POLYESTER AND HYDROXY FUNCTIONAL POLYETHER OR POLYESTER ADDUCTS OF AN AT LEAST TRIFUNCTIONAL ALCOHOL

Kazys Sekmakas, Chicago, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 307,099, Nov. 16, 1972. This application Oct. 23, 1973, Ser. No. 408,988

Int. Cl. C08g *37/34, 51/24*

U.S. Cl. 260—29.4 R **16 Claims**

1. Thermosetting aqueous coating composition having a total solids content of at least about 55% and comprising an aqueous medium containing at least 80 parts of water for every 20 parts of water-miscible volatile organic solvent and having dispersed therein:

1. essentially oil-free, non-gelled hydroxy functional acidic polyester formed by polyesterifying a polycarboxylic acid component, of which tricarboxylic acid or anhydride thereof selected from trimellitic of alpha-(2-carboxyethyl)-glutaric provides at least 70% of the acidic functionality, the balance being saturated dicarboxylic acid or anhydride, with a stoichiometric excess of a polyalcohol component consisting essentially of aliphatic diol, said polyalcohol component providing from 1.1 up to about 2 hydroxy equivalents per equivalent of carboxy in said polycarboxylic acid component, said polyester having an acid number in the range of from about 45 to about 60 and being dispersed in the aqueous medium with the aid of a base;

2. from 5% – 40%, based on total resin solids, of heat-hardening formaldehyde condensate dispersible in the aqueous medium and selected from aminoplasts and phenol-formaldehyde condensates; and

3. polyether or polyester adduct of ethylene oxide, 1,2-propylene oxide, or a lactone containing 3-14 carbon atoms with aliphatic polyhydric alcohol containing at least three hydroxyl groups, said adduct having a molecular weight in the range of from about 300 up to about 5000, said adduct being present in the aqueous medium in an amount of from 5% – 40%, based on total resin solids.

3,862,073
EMULSIFIER COMPOSITIONS FOR CREASEPROOFING TEXTILE MATERIALS WHICH CONTAIN COPOLYMERS OF UNSATURATED CARBOXYLIC ACIDS AND THEIR ESTERS

Heinz Bille, 1B Eschkopfstrasse 6703, Limburgerhof; Ernst Wilheim Hann, 37 Prinzregentenstrasse 6700, Ludwigshafen; Gerhard Luetzel, 7 Liebermannstrasse 6700, Ludwigshafen; Guenther Schmidt, 8 Neuwiesenstrasse 6700, Ludwigshafen, and Dieter Voelker, 105 Niezschestrasse 6700, Ludwigshafen, all of Germany

Filed June 27, 1972, Ser. No. 266,608

Claims priority, application Germany, July 5, 1971, 2133351

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.4 UA **6 Claims**

1. A mixture for creaseproofing textile materials containing cellulose and/or regenerated cellulose in an aqueous liquor which may or may not contain organic solvents and which contains methylolated amino resin-forming substances and optionally amino resin-forming substances which have been etherified at the methylol group, and an emulsifier composition comprising

A. from 5 to 70 parts by weight of the emulsifier composition of a copolymer containing polymerized units of the following monomers:

a. from 1 to 10% by weight of the copolymer of an α,β-ethylenically unsaturated carboxylic acid which contains from 3 to 10 carbon atoms, or a mixture of said carboxylic acids,

b. from 99 to 70% by weight of the copolymer of an ester of the carboxylic acids defined under (a) above with C_{1-8} alcohols of the aliphatic series, or a mixture of said esters and

c. from 0 to 20% by weight of the copolymer of at least one copolymerizable ethylenically unsaturated compound selected from the group consisting of acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, styrene, ethylene, propylene, a vinyl ester of a saturated carboxylic acid, vinyl ethyl ether, vinyl chloride, vinylidene chloride, butadiene, isoprene, N-methylolacrylamide, N-methylolmethacrylamide, 2-chloro-3-hydroxypropyl acrylate, 1,3-butanediol monoacrylate and 1,3-butanediol diacrylate

B. from 30 to 80 parts by weight of the emulsifier composition of a surfactant and

C. from 30 to 70 parts by weight of the emulsifier composition of water.

3,862,074
AQUEOUS POLYMERIC COMPOSITIONS OF NONIONIC URETHANE POLYMER AND ACRYLIC POLYMER

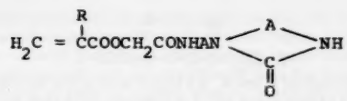
Richard M. Hickey, Concord, Mass., assignor to Environmental Enterprises, Inc., Berlin, Md.

Filed Nov. 30, 1971, Ser. No. 203,426

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 NR **4 Claims**

1. A coating or binder composition consisting essentially of a mechanical, aqueous dispersion of two separate polymeric solids, one being a nonionic urethane polymer prepared by reacting together an organic diamine and an isocyanate-terminated polyurethane prepolymer formed from a polyalkylene ether polyol and an organic polyisocyanate and the other being an addition polymer of a monomer having the formula:



where R is hydrogen or methyl and A is an alkylene group having two or three carbon atoms, the urethane polymer being present in an amount ranging from about 3 to about 90 percent by weight of the addition polymer and the solids content of the dispersion being at least 35 percent.

3,862,075
AQUOUS POLYMERIZATION OF UNSATURATED MONOMERS UTILIZING TRIHYDRIC OR TETRAHYDRIC ALCOHOLS TO PRODUCE EMULSIFIER-FREE DISPERSIONS

Kazys Sekmakas, Chicago, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed June 1, 1972, Ser. No. 258,890

Int. Cl. C08f *1/11*

U.S. Cl. 260—29.6 E **13 Claims**

1. A method of producing a dispersion of copolymer particles in water comprising, forming a liquid mixture of monoethylenic monomers and from 2% up to about 50%, based on the weight of said monomers, of trihydric or tetrahydric polyhydric alcohol having a molecular weight of up to about 6,000, said monomers including from about 1 to about 30% by weight of monoethylenic carboxylic acid, dispersing said mixture in water to form a dispersion, said dispersion including a free radical polymerization catalyst, subjecting the dispersed liquid mixture in said dispersion containing the said catalyst to agitation at an elevated polymerization temperature, with said monomers being in solution in the dispersed mixture, until polymerization of said monomers has been completed, and then neutralizing at least 10% of the acidity in the copolymer particles which are formed with a base.

3,862,076
PREPARATION OF VINYL CHLORIDE POLYMERS IN AQUEOUS DISPERSION WITH ALPHA HALOGEN SUBSTITUTED UNSYMMETRICAL DIACYL PEROXIDE INITIATOR

Thomas L. Dawson, Charleston, and Russell J. Hanna, South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 193,741, Oct. 29, 1971, abandoned. This application July 9, 1973, Ser. No. 377,536

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 R **14 Claims**

1. Method of preparing vinyl chloride polymer resin in an aqueous dispersion at an essentially constant polymerization rate with the formation of a stable latex which comprises the steps of:

a. homogenizing to a droplet size of about 2 microns or less a mixture of (1) about 1 to about 150 parts by weight of vinyl chloride monomer, (2) 0 to about 50 parts by weight of an ethylenically unsaturated monomer copolymerizable with vinyl chloride, (3) about 0.001 to about 10 parts by weight of at least one surfactant, and (4) about 0.00005 to about 3 parts by weight of an unsymmetrical 2-halogen substituted diacyl peroxide having the formula:

$$R\text{-}CH_2\text{-}\overset{O}{\overset{\|}{C}}\text{-}O\text{-}O\text{-}\overset{O}{\overset{\|}{C}}\text{-}CHX\text{-}R'$$

wherein each of R and R' is a higher alkyl group having about 10 to 16 carbon atoms and X is bromine or chlorine, per about 100 parts by weight of water;

b. heating the homogenized mixture of (a) in a pressure reactor under an inert atmosphere with stirring at a temperature of about 40° to about 55° C. for at least about 2 hours; and

c. recovering a stable latex of vinyl chloride polymer.

3,862,077

STABLE LATEXES OF A CHEMICALLY JOINED, PHASE SEPARATED THERMOPLASTIC GRAFT COPOLYMER AND METHOD FOR PREPARING THE SAME

Gerald O. Schulz, Downers Grove, and Ralph Milkovich, Naperville, both of Ill., assignors to CPC International Inc., Englewood Cliff, N.J.

Division of Ser. No. 282,099, Aug. 21, 1972, Pat. No. 3,786,116, which is a continuation-in-part of Ser. No. 244,205, April 14, 1972, Pat. No. 3,832,423, which is a continuation-in-part of Ser. No. 117,733, Feb. 22, 1971, abandoned. This application Aug. 3, 1973, Ser. No. 385,500

Int. Cl. C08f *29/50, 29/12, 45/24*

U.S. Cl. 260—29.6 RB **17 Claims**

1. A process for preparing a stable latex of a chemically joined, phase separated thermoplastic graft copolymer comprising:

1. copolymerizing:

a. from about 1 to about 95 percent by weight of a polymerizable macromolecular monomer comprising a linear polymer or copolymer having a molecular weight in the range of from about 5,000 to about 50,000 and having a substantially uniform molecular weight distribution, such that its ratio of Mw/Mn is less than about 1.1, said macromolecular monomer being further characterized as having no more than one polymerizable moiety per linear polymer or copolymer chain, said polymerizable moiety being on the end of the chain; and

b. from about 99 to about 5 percent by weight of at least one copolymerizable comonomer, said copolymerizable comonomers forming the polymeric backbones of said graft copolymer and said polymerizable macromolecular monomers forming the linear polymeric sidechains of said graft copolymer, and the linear polymeric sidechains of the graft copolymer are copolymerized into the backbone polymer through the polymerizable end group on said macromolecular monomer, and wherein said copolymerizable comonomer units of the backbone are comprised of polymerized ethylenically-unsaturated monomers, the linear polymeric sidechains of the graft copolymer which are copolymerized into the copolymeric backbone are separated by at least about 20 uninterrupted recurring monomeric units of said backbone polymer; the copolymerization and distribution of the sidechains along the backbone polymers being controlled by the relative reactivity ratios of the polymerizable end group on said macromolecular monomer and said copolymerizable comonomer;

2. said copolymerization being conducted in an aqueous latex copolymerization medium, wherein said polymerizable macromolecular monomer is dissolved in a small amount of a solvent therefor, and said solvent and polymerizable macromolecular monomer are emulsified in water by the action of an emulsifying agent before the copolymerization with said copolymerizable comonomer, said copolymerization being initiated by a polymerization catalyst which is soluble in the organic phase of the polymerization system; and

3. stopping the copolymerization prior to the formation of substantial amounts of homopolymers of said backbone polymer to thereby obtain a stable latex of a substantially pure, chemically joined, phase separated thermoplastic graft copolymer.

3,862,078

PROCESS FOR CONVERTING COARSE AQUEOUS POLYMER EMULSION TO FINE EMULSION

Oliver W. Burke, Jr., P.O. Box 2266, Fort Lauderdale, Fla. 33061

Continuation-in-part of Ser. No. 226,419, Feb. 15, 1972, , which is a continuation-in-part of Ser. No. 817,494, April 18, 1969, abandoned, and a continuation-in-part of Ser. Nos. 621,997, March 7, 1967, Pat. No. 3,503,917, and Ser. No. 691,823, Dec. 19, 1967, Pat. No. 3,652,482, and Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,644,263, and Ser. No. 784,596, Dec. 18, 1968, Pat. No. 3,622,127. This application Jan. 15, 1973, Ser. No. 323,381

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 R **19 Claims**

1. A process for continuously converting a coarse aqueous emulsion of a solvent/polymer cement, the polymer of which is selected from the polymers which are essentially organic solvent soluble or dispersible and essentially water insoluble and the solvent of which is selected from the volatile organic solvents for said polymer which are essentially water immiscible and which themselves, or as azeotopes with water, have boiling points lower than that of water at atmospheric pressure, to a fine emulsion in which substantially all of the particles constituting the discontinuous phase are of precursor latex particle size, with the aid of emulsion homogenizing units each comprising an inlet and an outlet chamber with a restricted orifice therebetween and pressure raising means between its inlet and its restricted orifice sufficient to cause homogenization of emulsion passing through the unit, said process comprising:

a. passing a flow of said coarse aqueous emulsion through a number of said homogenizing units connected seriatim in multi-stage arrangement, said number being sufficient to reduce essentially all of the particles of the discontinuous phase to precursor latex particle size in the emulsion as it passes downstream therethrough, while

b. maintaining the temperature of the flow at values which are both below the maximum temperature for stability of the emulsion and within the range in which the viscosity of the cement is below the maximum viscosity which can be emulsified by said homogenizing units, and

c. maintaining predetermined flows through a pressure drops across the orifices of said homogenizing units, and rendering the process continuous by (1) adding to the flow between adjacent units, when necessary, minor proportions of fine emulsion from the flow being discharged from a unit downstream thereof, and (2) removing from the flow between adjacent units, when necessary, minor proportions of the emulsion thereat.

3,862,079

MODIFIED ZWITTERION RESINS

Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 21, 1973, Ser. No. 361,903

Int. Cl. C08d *7/02;* **C07d** *63/00, 63/04, 65/04*

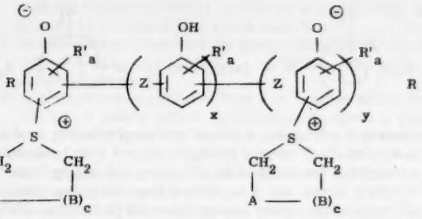
U.S. Cl. 260—29.7 SQ **17 Claims**

1. A polymeric latex comprising

A. a flexible vinylic polymer dispersed in an aqueous media; and

B. 0.5 to 10 weight percent, based on the weight of vinylic polymer, of a silane-modified zwitterionic composition, said composition consisting essentially of

a. about 90 to 99.5 weight percent of soluble zwitterionic monomer, at least about 10 weight percent of said monomer being polyfunctional and of the formula



in which

each R is independently selected from the group consisting of hydrogen, chlorine and bromine atoms, the hydroxyl group and alkoxy radicals containing from one to four inclusive carbon atoms; each R′ is independently selected from the group consisting of hydrogen, chlorine and bromine atoms and alkyl radicals containing from one to four inclusive carbon atoms; at least one R′ being a hydrogen atom and *a* having a value of 2 or 3;

each sulfur is ortho or para to the phenolic oxygen each A and B are independently selected from the group consisting of $-CH_2-$, $-CHR'-$, and *c* has a value of 1 or 2;

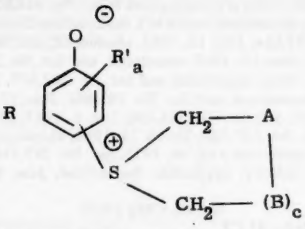
Z is a bridging radical selected from the group consisting of $-CR''_2-$, $-O-$, $-S-$, $-O(C_mH_{2m})O-$, or

$$-OC(C_nH_{2n})CO-;$$

in which each R″ is a hydrogen atom or an alkyl radical containing from one to four inclusive carbon atoms; *m* has a value of from 1 to 6 inclusive and *n* has a value of from 2 to 6 inclusive;

x and *y* are numbers with a sum of from 1 to 20;

any remaining monomer being monofunctional and of the formula



R, R′, A, B and *c* are as defined; and

b. 0.5 to 10 weight percent of an organosilane coupling agent or water soluble partial condensate thereof, said silane having an organofunctional substituent attached to the silicon atom through a silicon-carbon bond, said substituent being selected from the group consisting of epoxy, amine, imino, carboxy and mercapto radicals; the remaining substituents being hydroxyl groups or non-acidic hydrolyzable radicals.

3,862,080

FOUNDRY BINDER COMPOSITIONS

Colin John Smeed Standen, and William Sidney Phillips, both of Waltham Abbey, England, assignors to Catalin Limited, Essex, England

Filed June 28, 1972, Ser. No. 267,152

Claims priority, application Great Britain, June 29, 1971, 30507/71

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 N **7 Claims**

1. In a method of forming a foundry sand mould or core by mixing with sand an effective amount of an organic binder and a polyisocyanate as a hardening agent therefor, the improvement which consists in using as the polyisocyanate hardenable binder at least one liquid ethylenically unsaturated, long-chain-alkyl substituted phenol extracted from the shell of the cashew nut or polymer thereof, by mixing with the sand:

A. 60 to 100 parts by weight of said at least one ethylenically unsaturated long-chain-alkyl substituted phenol or polymer thereof, 0.04 parts by weight of a compatible solvent for said substituted phenol or polymer, and, for each 100 parts by weight of A,

B. from 50 to 100 parts by weight of an organic polyisocyanate,

C. 1 to 10 parts by weight of an amine selected from the group consisting of primary and tertiary alkylamines, alkylpolyamines, mono-, di- and tri-alkanolamines and alkyl-alkanolamines, primary arylamines and heterocyclic amines, and 0 to 0.7 parts by weight of an organic tin compound, the total amount of components (A), (B) and (C) being from 1 to 2 parts per 100 by weight of the sand.

3,862,081

SILICONE RUBBER COMPOSITIONS

Kunio Itoh; Naohiko Harada, and Takeo Yoshida, all of Annaka, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Filed Oct. 23, 1973, Ser. No. 408,414

Claims priority, application Japan, Oct. 26, 1972, 47-107554

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB **8 Claims**

1. A silicone rubber composition comprising (a) 100 parts by weight of an organopolysiloxane having the average unit formula

$$R_aSiO_{4-a/2}$$

where R is one or more substituted or unsubstituted monovalent hydrocarbon radicals selected from the group consisting of methyl, vinyl and phenyl radicals and a is a positive number from 1.90 to 2.05, (b) from 30 to 200 parts by weight of a finely divided siliceous filler, (c) from 3 to 200 p.p.m. by weight based on 100 parts by weight of ingredient (a) of platinum or a compound containing platinum in an equivalent amount, (d) α, α'-azobisisobutyronitrile in an amount of from 2 to 100 times as much as the weight of ingredient (c), and (e) a curing agent.

3,862,082

FLAME RETARDANT SILICONE RUBBER COMPOSITIONS

Masayuki Hatanaka; Ryooichi Mahekawa, and Hideo Maruyama, all of Yokohama, Japan, assignors to Toshiba Silicone Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1973, Ser. No. 411,396

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB **15 Claims**

1. A flame retardant silicone rubber composition comprising (A) 100 parts by weight of a polydiorganosiloxane gum containing organic groups selected from the group consisting of methyl, vinyl and phenyl groups, and containing from 0 to 2 mole % of silicon-bonded vinyl groups and from 0 to 10 mole % of silicon-bonded phenyl groups, the number of silicon-bonded organic groups being from 1.98 to 2.002 per silicon atom, (B) 10 to 100 parts by weight of a reinforcing inorganic filler, (C) 10 to 150 parts of platinum in the form of a platinum containing compound per million, by weight, based on the weight of said polydiorganosiloxane gum, (D) 0.3 to 30 parts by weight of titanium dioxide treated with an organosilane or an organosiloxane at a temperature of from 150° to 400°C, and (E) 0.1 to 10 parts by weight of a curing agent consisting of an organic peroxide.

3,862,083

HIGH TEMPERATURE BRUSHING COMPOUND

George D. Dixon, Monroeville; Morris A. Mendelson, and Charles R. Ruffing, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 29, 1972, Ser. No. 310,518

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R 15 Claims

1. A high temperature brushing compound comprising:

1. about 30 to about 70% of a reaction product having an acid number of up to about 25 which comprises:
   - A. about 750 to about 1400 parts of a compound about 85 to about 100% selected from the group consisting of isophtholic acid, its acid halides, its esters to C_6, and mixtures thereof, and up to about 15% selected from the group consisting of terephthalic acid, its acid halides, its esters to C_6, and mixtures thereof;
   - B. about 650 to about parts of a polyol selected from the group consisting of ethylene glycol, glycerol, and mixtures thereof; and
   - C. about 440 to about 980 parts of a compound selected from the group consisting of unsaturated carboxylic acids, their acid halides, their esters to C_6, their anhydrides, and mixtures thereof;
2. about 30 to about 70% of a compound selected from the group consisting of diallyl isophthalate, its prepolymers, and mixtures thereof;
3. about 0.1 to about 3 phr free-radical generator;
4. about 1 to about 10 phr inorganic thixotrope;
5. up to about 20 phr inorganic filler; and
6. up to about 0.5% of a free-radical inhibitor.

3,862,084

PREPARATION OF POLYETHYLENE TEREPHTHALATE CONTAINING INORGANIC FILLERS

Bertrus H. Zandstra, and Jan Bosman, both of Arnhem, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed July 9, 1971, Ser. No. 161,316

Claims priority, application Netherlands, July 10, 1970, 7010296

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 P 1 Claim

1. A process for the preparation of polyethylene terephthalate polymer containing inorganic filler in which process amorphous polyethylene terephthalate chips and inorganic filler are mixed and heated to a temperature within the range between approximately 5° C. below and approximately 27° C. above the glass transition point of said polyethylene terephthalate polymer, almost all of said inorganic filler being taken up by the resulting softened polymer chips, wherein said inorganic filler is mixed with said polymer in an amount of 2% to 30% by weight based on the polymer.

3,862,085

POLYESTER PLASTIC COMPOSITIONS CONTAINING BIS-PHENOXY FLAME RETARDANTS

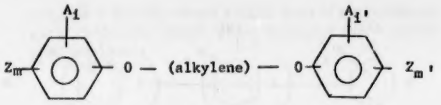
Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corp., St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,798

Int. Cl. C08g *51/60*

U.S. Cl. 260—45.9 R 17 Claims

1. A plastic composition containing polyesters having incorporated therein an effective amount of a flame retardant which is a bis-phenoxy compound having the formula:



wherein Z is bromine; m and m' are integers having a value of 1–4; i and i' are integers having a value of 1 or 2; alkylene is a straight or branched chain alkylene group having from 1 to 6 carbon atoms; and A is selected from the group consisting of cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl, or halo- benzyl, with the proviso that when m or m' is 4, i or i' respectively is 1.

3,862,086

VINYL CHLORIDE POLYMERS CONTAINING POTASSIUM ZINC CUPROCYANIDE

Arthur W. McRowe, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 19, 1973, Ser. No. 407,863

Int. Cl. C08f *45/56*

U.S. Cl. 260—45.75 C 3 Claims

1. A fire and smoke retardant composition comprising potassium zinc cuprocyanide of the formula $KZnCu(CN)_4$ in amount of about 0.1 to 10 weight parts per 100 weight parts of a vinyl chloride polymer.

3,862,087

LIGHT STABLE LINEAR POLYCARBONAMIDE AND POLYESTER MATERIALS

Hansjorg Heller, Riehen; Jean Rody, Basel, and Ernst Keller, Baselland, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

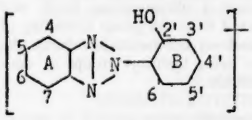
Division of Ser. No. 271,044, July 12, 1972, abandoned, which is a division of Ser. No. 884,364, Dec. 11, 1969, Pat. No. 3,766,205, which is a continuation of Ser. No. 544,834, April 25, 1966, abandoned, which is a continuation-in-part of Ser. Nos. 202,664, June 15, 1962, abandoned, and Ser. No. 202,665, June 15, 1962, abandoned, and Ser. No. 202,666, June 15, 1962, abandoned, and Ser. No. 202,667, June 15, 1962, abandoned, and Ser. No. 202,668, June 15, 1962, abandoned, and Ser. No. 328,480, Dec. 6, 1963, abandoned, and Ser. No. 535,740, March 21, 1966, abandoned. This application Aug. 10, 1973, Ser. No. 387,310

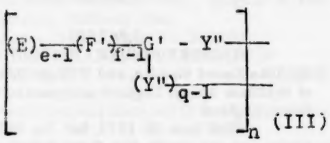
Claims priority, application Switzerland, June 16, 1961, 7103/61

Int. Cl. C08g *20/20*

U.S. Cl. 260—47 CZ 9 Claims

1. A linear polycarbon amide containing chemically bounded therein 0.1 to 10 percent by total weight of said linear polymer the moiety





(III)

wherein

A is a monocyclic arylene radical,

B is a monocyclic arylene radical,

E is an alkylene radical of from 1 to 4 carbon atoms,

e, f, n and q are independently integers from one to two,

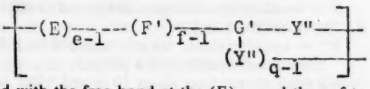
with the limitations that (1) f must be at least as large as e, and (2) the sum of $q + n$ is at most 3,

F′ is a member selected from the group consisting of —O—, —S—, —SO_2—, —SO_2NH—, —CONH— and —N— carboxylic acidacyl,

G′ is a hydrocarbon radical of from 1 to 7 carbon atoms the valency of which radical methematically equals q plus one, with the limitation that, if G′ is bound to at least two heteroatoms one of which pertains to F′ as defined and the other to Y″, each of said heteroatoms is bound to a different carbon atom of G′, and

Y″ is a member selected from the group consisting of carbonyl and imino, with the limitation that when Y″ is imino, Y″ must be bound to a saturated carbon atom contained in said G′,

each radical



being linked with the free bond at the $(E)_{e-1}$ end thereof to one of the positions 3′, 4′ or 5′ of ring B or to position 5 of ring A.

3,862,088

SOLUBLE AROMATIC COPOLYAMIDES AND THREADS THEREOF WITH A HIGH MODULUS OF ELASTICITY AND HIGH TENSILE STRENGTH

Gerhard Dieter Wolf; Hans Egon Kunzel, both of Dormagen; Gunter Blankenstein, Stommeln, and Francis Bentz, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

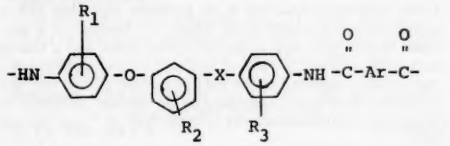
Filed Oct. 4, 1973, Ser. No. 403,389

Claims priority, application Germany, Oct. 4, 1972, 2248662

Int. Cl. C08g *20/20*

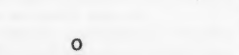
U.S. Cl. 260—47 CZ **8 Claims**

1. A high molecular weight aromatic copolyamide which consists essentially of from 50 to 95 mol -% of structural units of the general formula



in which

X represents the group



R_1 and R_2, which may be the same or different, represent hydrogen, an alkoxy group, an alkyl group or a halogen atom,

R_3 represents hydrogen, halogen, an alkyl, an alkoxy group, a nitrile group, a $COOR_4$ or -$CONR_5R_6$ group and

Ar represents a divalent aromatic group,

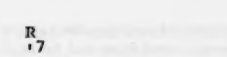
R_4 denoting hydrogen or an alkyl group and

R_5 and R_6, which may be the same or different, representing hydrogen, an alkyl group or aryl group and 5–50 mol -% of structural units which contain hydantoin rings, which structural units are represented by the general formula

— HN — Y — Hy — Y′ — Z — NH — OC — Ar — CO —

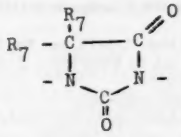
in which

Z represents a single bond or the group — Hy — Y — and Y and Y′ may be the same or different and represent bivalent aromatic groups which comprise one or more condensed or several aromatic rings which are joined together by single bonds or by bridge members selected from the group consisting of —O—, —S—, —SO_2—,



or — HN — SO_2 — and the halogen-; alkyl-, NO_2 - or CN-substitution products of such aromatic groups

Hy represents a bivalent hydantoin ring of the formula



in which

R_7 represents hydrogen, alkyl, cycloalkyl, a phenyl group

Ar represents a bivalent aromatic group wherein the copolyamides have a relative solution viscosity as determined on an 0.5% solution of the copolyamide in concentrated sulphuric acid at 25°C of from 1.5 to 3.0.

3,862,089

PROCESS FOR THE PREPARATION OF THERMOSETTING PHENOLIC SYNTHETIC RESIN

Yoshiyuki Shinohara, Otake; Katuhiko Tasaka, Iwakuni; Kinya Mizui, Otake, and Shigeru Katayama, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed June 26, 1970, Ser. No. 50,323

Claims priority, application Japan, July 5, 1969, 44-52811; July 5, 1969, 44-52812

Int. Cl. C08g *5/00*

U.S. Cl. 260—55 **9 Claims**

1. A process for the preparation of a thermosetting resin which consists essentially of reacting under heating a residue (*R*) consisting predominantly of compounds of a higher boiling point than cresol remaining after recovery by distillation of cresol and acetone from acid-catalyzed cleavage reaction products of cymene hydroperoxide with at least one phenolic compound (*P*) selected from the group consisting of phenol and cresol and an aldehyde (*A*) wherein when an acid catalyst (novalak type catalyst) is used.

i. the mol number of (*A*) per 1 g. atom of oxygen in the mixture of (*R*) and (*P*) is within the range of 0.1 – 2, and when an alkali catalyst (resol type catalyst) is used.

ii. the mol number of (*A*) per 1 g atom of oxygen in the mixture of (*R*) and (*P*) is within the range of 0.1 – 2.5,

the weight ratio of the residue (*R*) to the phenolic compound (*P*), as (*R*)/(*P*), being within the range of from 10/90 to 70/30.

3,862,090

PROCESS FOR PRODUCING OXYMETHYLENE COPOLYMERS

Edward Munoz, Kleberg, Tex., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 157,668, June 28, 1971, abandoned. This application Aug. 28, 1973, Ser. No. 392,363

Int. Cl. C08g *1/20*

U.S. Cl. 260—67 FP **11 Claims**

1. In a process for the production of oxymethylene copolymers of improved thermal stability and/or hydrolysis resistance by the copolymerization of trioxane with a cyclic ether having at least two adjacent carbon atoms and at least one oxygen atom with a Lewis Acid polymerization catalyst, the improvement which comprises conducting said polymeriza-

tion in the presence of an organotin catalyst having at least one direct chemical bond from said tin atom to an atom selected from the group consisting of oxygen and sulfur.

3,862,091

QUATERNIZED N-VINYL LACTAM POLYMERIC COMPOSITIONS AND MANNICH ADDUCTS THEREOF

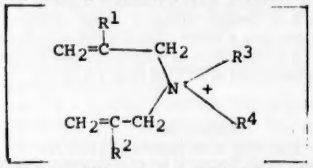
Eugene S. Barabas, Watchung, and Frederick Grosser, Midland Park, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Mar. 7, 1972, Ser. No. 232,612
Int. Cl. C08f *19/00, 27/08*
U.S. Cl. 260—73 L **7 Claims**

1. A composition comprising

A. the linear copolymer having a molecular weight within the range of 2,000 to 500,000 a mixture of monomers comprising

1. 20–80 mole percent of a quaternary ammonium compound represented by the formula



wherein R^1 and R^2 are selected from the group consisting of hydrogen, methyl and ethyl radicals; R^3 and R^4 each represent a C_{1-6} alkyl group, and X represents an anion,

2. 80–20 mole percent of an N-vinyl lactam monomer; and

3. 0–20 mole percent of another ethylenically unsaturated monomer.

3,862,092

POLYAMIDE-IMIDE COMPOSITIONS

Ralph G. Flowers, Pittsfield, and Thomas L. Sherer, Richmond, both of Mass., assignors to General Electric Company, New York, N.Y.

Filed July 5, 1973, Ser. No. 376,392
Int. Cl. C08g *20/32*
U.S. Cl. 260—78 TF **5 Claims**

1. A polyamide-imide composition consisting essentially of the product obtained by reacting (1) the reaction product of trimellitic anhydride, hexamethylene diamine and an aromatic diamine with (2) maleic anhydride, wherein said trimellitic anhydride, hexamethylene diamine and aromatic diamine have molar porportions lying within the area defined approximately by Area A in the accompanying triaxial diagram.

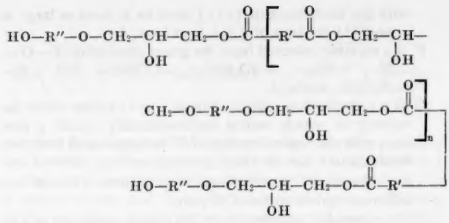
3,862,093

POLYETHER CONTAINING CYCLOALIPHATIC STRUCTURAL ELEMENTS AND HYDROXYL GROUPS

Karl Jellinek, Letmathe; Post Udo, Wissmar uber Giessen, and Rudi Oellig, Duisburg-Meiderich, all of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 227,256, Feb. 17, 1972, Pat. No. 3,784,601. This application Apr. 19, 1973, Ser. No. 352,844
Claims priority, application Germany, Feb. 17, 1971, 2107441
Int. Cl. C08g *22/08*
U.S. Cl. 260—75 EP **4 Claims**

1. A polyether of the formula:



in which

R' = unsubstituted, halogen-substituted or alkyl substituted cyclohexylene ring,

R'' = cyclohexylene, tricyclodecane-dimethylene or cyclohexanedimethylene, 4,4'propane-dicyclohexylene and

n = an integer from about 10 to about 40.

3,862,094

ELECTROCONDUCTIVE HIGH POLYMER COMPOSITION

Isao Shinohara; Eishun Tsuchida, and Katsuhiro Mizoguchi, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo-to, Japan

Filed Aug. 24, 1972, Ser. No. 283,420
Claims priority, application Japan, Aug. 24, 1971, 46-64006
Int. Cl. C08f *7/00, 27/08;* **C08g** *33/02*
U.S. Cl. 260—78.4 N **11 Claims**

1. An electroconductive film forming high polymer composition which comprises a salt of an integral type of polycationic polymer containing in its principal repeating unit, a quarternarized nitrogen atom, which is a member of a saturated heterocyclic ring acting aas a side chain, and a linking unit as the cationic portion of said salt, an anion radical of a tetracyano compound as the anionic portion of said salt, and a neutral tetracyano compound in an amount sufficient to impart an electroconductivity of more than 10^{-7} cm^{-1} to said salt.

3,862,095

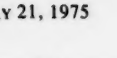
ARYLENE SULFIDE POLYMERS

Robert W. Campbell, and Charles W. Moberly, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,779
Int. Cl. C08g *23/00*
U.S. Cl. 260—79.1 **18 Claims**

1. A method of producing a polymer which comprises:

a. forming a composition by contacting at least one polyhalo-substituted aromatic compound wherein the halogen atoms are attached to aromatic ring carbon atoms, at least one base selected from the hydroxides of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium and barium and the carbonates of sodium, potassium, rubidium and cesium, at least one organic amide and at least one thiourea having the formula



wherein R is selected from the group consisting of hydrogen and alkyl, cycloalkyl and aryl radicals or combinations of said radicals, the number of carbon atoms in each R group being within the range of 0 to about 12; and,

b. maintaining at least a portion of said composition at polymerization conditions to produce said polymer.

3,862,096

METHOD OF POLYMERIZING ACRYLIC MONOMERS

Shinichiro Kitamura, Kobe; Yasuo Toi, Suita, and Toshizi Kano, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 4, 1972, Ser. No. 311,622

Claims priority, application Japan, Dec. 8, 1971, 46-99623; Sept. 4, 1972, 47-88922

Int. Cl. C08f *1/60*

U.S. Cl. 260—80.73 **10 Claims**

1. A method of polymerizing one or more acrylic monomers selected from the group consisting of acrylic acid, methacrylic acid, and their esters and acrylamide, and acrylonitrile, by polymerizing and hardening said one or more acrylic monomers in the presence of an organic hydroperoxide selected from the group consisting of alkyl hydroperoxide, aryl hydroperoxide and aralkyl hydroperoxide, which has one or two of -O-O-H group, and mixtures thereof, and a compound having the general formula ROSOCl, wherein R is alkyl, aryl or aralkyl.

3,862,097

PROCESS FOR PREPARING COPOLYMERIZABLE MACROMOLECULAR MONOMERS HAVING A SUBSTANTIALLY UNIFORM MOLECULAR WEIGHT DISTRIBUTION

Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, both of Ill., assignors to CPC International, Engelwood Cliff, N.J.

Division of Ser. No. 282,099, Aug. 21, 1972, Pat. No. 3,786,116, which is a continuation-in-part of Ser. No. 244,205, April 14, 1972, Pat. No. 3,832,423, which is a continuation-in-part of Ser. No. 117,733, Feb. 22, 1971, abandoned. This application July 2, 1973, Ser. No. 376,081

Int. Cl. C08f *29/12, 29/50*

U.S. Cl. 260—93.5 A **13 Claims**

1. A process for preparing a copolymerizable macromolecular monomer, comprising the sequential steps of:

a. polymerizing a vinyl-containing compound in the presence of an alkali metal hydrocarbyl anionic polymerization initiator to produce a monofunctional living polymer or copolymer, said vinyl-containing compound being a member selected from the group consisting of conjugated dienes containing 4 to 12 carbon atoms per molecule and vinyl-substituted aromatic hydrocarbons containing up to 12 carbon atoms and comonomeric mixtures thereof,

b. contacting said monofunctional living polymer with an alkylene oxide capping agent having eight or fewer carbon atoms wherein said contacting step (b) is carried out in the presence of amounts of alkylene oxide and under conditions sufficient to thereby obtain a monofunctional alkoxide anion terminated macromolecular monomer, and

c. contacting said monofunctional alkoxide terminated macromolecular monomer from step (b) with a halogen-containing compound which also contains a polymerizable moiety, said halogen-containing compound being a member selected from the group consisting of acrylyl halide, methacrylyl halide, vinyl-2-haloethyl ether, vinyl haloacetate, halomethylmaleic anhydride and its esters, allyl halide, methallyl halide, epihalohydrin, and vinylbenzyl halide, wherein said contacting step (c) is carried out in the presence of amounts of the halogen-containing compound and under conditions to thereby produce a copolymerizable macromolecular monomer characterized as having no more than one copolymerizable moiety per linear polymer or copolymer chain, said copolymerizable macromolecular monomer being further characterized as having a substantially uniform molecular weight distribution such that its ratio of Mw/Mn is less than about 1.1, wherein Mw is the weight average molecular weight of the copolymerizable macromolecular monomer and Mn is the number average molecular weight of the copolymerizable macromolecular monomer.

3,862,098

ALPHA-OLEFIN TERMINATED POLYSTYRENE MACROMOLECULAR MONOMERS HAVING A SUBSTANTIALLY UNIFORM MOLECULAR WEIGHT DISTRIBUTION

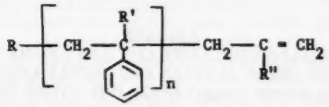
Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, both of Ill., assignors to CPC International, Inc., Englewood Cliffs, N.J.

Division of Ser. No. 282,099, Aug. 21, 1972, Pat. No. 3,786,116 which is a continuation-in-part of Ser. No. 244,205, April 14, 1972, which is a continuation-in-part of Ser. No. 117,733, Feb. 22, 1971, abandoned. This application July 2, 1973, Ser. No. 376,109

Int. Cl. C08f *29/12, 29/50*

U.S. Cl. 260—93.5 R **10 Claims**

1. A copolymerizable macromolecular monomer having a substantially uniform molecular weight distribution such that its ratio of Mw/Mn is not substantially above about 1.1, wherein Mw is the weight average molecular weight of the macromolecular monomer, and Mn is the number average molecular weight of the macromolecular monomer, said macromolecular monomer being represented by the structural formula:



wherein R is lower alkyl and R′ and R″ are each either hydrogen or methyl, and n is a positive integer having a value of at least about 20.

3,862,099

THERMOPLASTIC ADHESIVES

Nelson S. Marans, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.

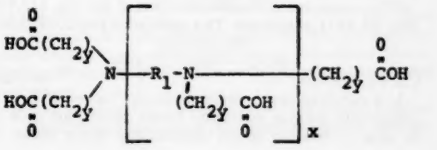
Filed Dec. 12, 1973, Ser. No. 424,238

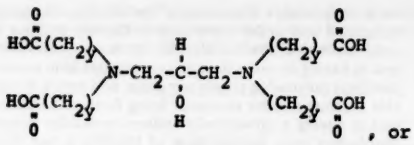
Int. Cl. C08f *29/02, 45/72*

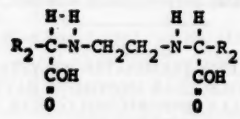
U.S. Cl. 260—93.7 **10 Claims**

1. A hot melt adhesive composition consisting essentially of an intimate mixture of 100 parts of a thermoplastic polymer selected from the group consisting of high density polyethylene, low density polyethylene, and polypropylene and 0.01-10 parts of a chelate of:

a. an amino acid selected from a first group consisting of



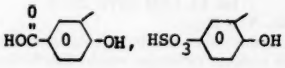




in which;

i. R_1 is an alkylene group having 2-10 carbon atoms;

(ii) R_2 is or ;



iii. x is 0 or an integer from 1 to 4; and iv. y is 1 or 2; and

b. a metallic ion selected from a second group consisting of titanium, barium, cadmium, iron, manganese, lead, tin, copper, cobalt, zinc, or calcium the chelate being free of acid hydrogen ions.

3,862,100

ALKALI METAL ALIPHATIC AND AROMATIC HYDROCARBON ACETALS AND KETALS AND THEIR USE AS POLYMERIZATION INITIATORS, ETC.

Adel Farhan Halasa, Bath, and Donald Norman Schulz, Hartville, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 13, 1972, Ser. No. 314,876

Int. Cl. C08d *120*

U.S. Cl. 260—94.2 R **9 Claims**

1. Lithium-terminated homopolymers and copolymers of conjugated dienes and copolymers of conjugated dienes and copolymers of conjugated dienes and styrene terminated with an aliphatic acetal or ketal group which is an hydroxyl carrier, the content of the vinyl configuration of the repeating conjugated diene units being substantially 36.4 to 54.0 per cent.

3,862,101

ACRYLATE AND METHACRYLATE TERMINATED POLYDIENE MACROMOLECULAR MONOMERS HAVING A SUBSTANTIALLY UNIFORM MOLECULAR WEIGHT DISTRIBUTION

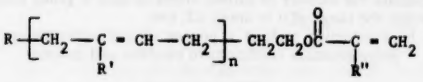
Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Division of Ser. No. 282,099, Aug. 21, 1972, Pat. No. 3,786,116, Continuation-in-part of Ser. No. 244,205, April 14, 1972, , which is a continuation-in-part of Ser. No. 117,733, Feb. 22, 1971, abandoned. This application July 2, 1973, Ser. No. 376,030

Int. Cl. C08d *1/20, 5/04*

U.S. Cl. 260—94.7 A **10 Claims**

1. A copolymerizable macromolecular monomer having a substantially uniform molecular weight distribution such that its ratio of $\overline{M}w/\overline{M}n$ is not substantially above about 1.1, wherein $\overline{M}w$ is the weight average 20. **weight of the macromolecular monomer, and $\overline{M}n$ is the number average molecular weight of the macromolecular monomer, said macromolecular monomer being represented by the structural formula:**



wherein R is lower alkyl and R′ and R″ are each either hydrogen or methyl, and n is a positive integer having a value of at least about **20.**

3,862,102

ALPHA-OLEFIN TERMINATED POLYDIENE MACROMOLECULAR MONOMERS HAVING A SUBSTANTIALLY UNIFORM MOLECULAR WEIGHT DISTRIBUTION

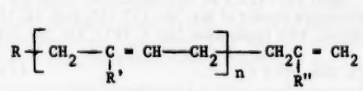
Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, both of Ill., assignors to CPC International Inc., Englewood Cliff, N.J.

Division of Ser. No. 282,099, Aug. 21, 1972, Pat. No. 3,786,116, Continuation-in-part of Ser. No. 244,205, April 14, 1972, , which is a continuation-in-part of Ser. No. 117,733, Feb. 22, 1971, abandoned. This application July 2, 1973, Ser. No. 376,107

Int. Cl. C08f *29/12, 29/50*

U.S. Cl. 260—94.7 R **10 Claims**

1. A copolymerizable macromolecular monomer having a substantially uniform molecular weight distribution such that its ratio of $\overline{M}w/\overline{M}n$ is not substantially above about 1.1, wherein $\overline{M}w$ is the weight average molecular weight of the macromolecular monomer, and $\overline{M}n$ is the number average molecular weight of the macromolecular monomer, said macromolecular monomer being represented by the structural formula:



wherein R is lower alkyl, R′ and R″ are each either hydrogen or methyl and n is a positive integer having a value of at least about 20.

3,862,103

METHOD OF RECOVERING POLYMER FROM ITS SOLUTION

Everett W. Campbell, League City, Tex., and Carl E. Traina, Uniontown, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

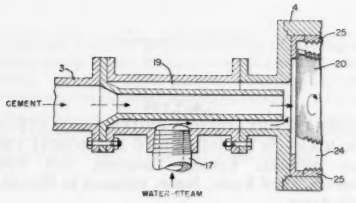
Continuation of Ser. No. 192,933, Oct. 27, 1971, , which is a continuation of Ser. No. 854,489, Sept. 2, 1969, abandoned. This application Nov. 30, 1973, Ser. No. 420,750

Int. Cl. C08d *5/00*

U.S. Cl. 260—94.7 R **2 Claims**

1. In a method for obtaining a polymer from a solvent dispersion of said polymer, the steps of feeding a water/steam mixture and said solvent dispersion into a cavity of a grinding pumping device to form an admixture, moving said admixture

by the rotation of an impeller in the cavity of said device to size the polymer as a crumb and onto a separation zone,



separating the solvent as a vapor in the separating zone before separating the crumb from the crumb-water mixture.

3,862,104

LARGE PORE SILICA GEL CATALYSTS

Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 216,236, Jan. 7, 1972, abandoned. This application Oct. 15, 1973, Ser. No. 406,370

Int. Cl. C08f *1/66, 3/02*

U.S. Cl. 260—94.9 D **8 Claims**

1. A method for polymerizing olefins which comprises contacting said olefins with a catalyst produced by:

a. introducing an alkali metal silicate solution into a solution comprising an ammonium salt to form a silica hydrogel;

b. removing water from said hydrogel by azeotropic distillation with an oxygen-containing organic compound to produce a substantially water-free silica-containing composition;

c. introducing a chromium compound into said silica;

d. recovering said silica-containing composition, thus modified with chromium; and

e. subjecting said thus recovered composition to calcination to activate same.

3,862,105

NITROXIDIZED POLYMERS HAVING NITRO AND PEROXY NITRATE FUNCTIONS THEREIN

Donald R. Lachowicz, Fishkill, and Charles B. Holder, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

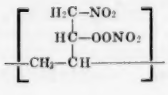
Division of Ser. No. 148,144, May 28, 1971, Pat. No. 3,751,522. This application Jan. 22, 1973, Ser. No. 325,469

Int. Cl. C08f *15/40, 17/00*

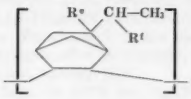
U.S. Cl. 260—80.78 **3 Claims**

1. A nitrooxidized polymer selected from the group consisting of

A. a polymer comprising recurring units of the formula:

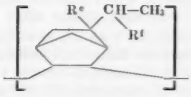


B. a polymer consisting of recurring units of the formula:



wherein R^e and R^f are independently selected from the group consisting of $OONO_2$ and NO_2 and with the proviso that when R^e is $OONO_2$ then R^f is NO_2 and when R^e is NO_2, then R^f is $OONO_2$, and

C. a polymer comprising recurring units of a terpolymer of ethylene, propylene and units of the formula:



wherein R^e and R_f have the same meaning as previously described in (B) above.

3,862,106

THERMOPLASTIC BLEND OF PARTIALLY CURED MONOOLEFIN COPOLYMER RUBBER AND POLYOLEFIN PLASTIC

William K. Fischer, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 108,225, Jan. 20, 1971, Pat. No. 3,758,643. This application June 4, 1973, Ser. No. 366,927

Int. Cl. C08f *29/12, 37/18*

U.S. Cl. 260—80.78 **3 Claims**

1. A rubbery copolymer of ethylene and at least one other copolymerizable monoolefin of the formula CH_2=CHR where R is an alkyl radical having from 1 to 12 carbon atoms, with or without at least one copolymerizable polyene, said copolymer being partially cross-linked to a gel content of at least 30% but less than 90% by weight measured by immersion in cyclohexane for 48 hours at 73°F.

3,862,107

METHOD OF CURING POLYMERS WITH AZO COMPOUNDS

Ronald Edward MacLeay, Williamsville, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

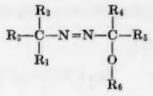
Division of Ser. No. 193,568, Oct. 28, 1971, Pat. No. 3,776,885. This application Oct. 24, 1973, Ser. No. 409,127

Int. Cl. C08f *1/88*

U.S. Cl. 260—85.1 **17 Claims**

1. The process of cross-linking a polymer selected from the group consisting of polyethylene, styrene-butadiene rubber, nitrile rubber, and poly-(ethylenevinyl acetate) comprising the steps of

1. incorporating into 100 parts by weight of said polymer 0.5 to 20 millimoles of a compound having the formula



in which

R_1 is an aliphatic hydrocarbon group of 1 to 8 carbon atoms, cyano, aromatic hydrocarbon of 6 to 14 carbon atoms, aralkyl having 7 to 14 carbon atoms or R_6O;

R_2, R_3 and R_4 are aliphatic hydrocarbon groups of 1 to 12 carbon atoms; or cycloaliphatic hydrocarbon groups of 3 to 12 carbon atoms;

R_2 and R_3 together can form a bivalent aliphatic hydrocarbon radical of 4 to 11 carbon atoms which can be substituted with halo, cyano, alkyl, aryl, acyloxy or alkoxycarbonyl;

R_4 and R_5 together can form a bivalent aliphatic hydrocarbon radical of 4 to 11 carbon atoms which can be substituted with halo, cyano, alkyl, aryl, acyloxy or alkoxycarbonyl; R_5 is an aliphatic hydrocarbon group of 1 to 12 carbon atoms; cycloaliphatic hydrocarbon group of 3 to 12 carbon atoms, aryl, aryloxyalkyl, alkoxyalkyl, alkoxycarbonylalkyl, acyloxyalkyl, hydroxyalkyl, aralkyl, acylalkyl, carboxyalkyl, cyanoalkyl, haloalkyl or t-alkylperoxyalkyl;

R_6 is an aliphatic hydrocarbon group of 1 to 12 carbon atoms, cycloaliphatic hydrocarbon of 3 to 12 carbon atoms, aryl or aralkyl having up to 14 carbon atoms.

2. forming the polymer mixture into the desired shape; and,

3. heating the polymer mixture at a temperature above 250° to 450°F. until cross-linking is effected.

Al Conn
Tar Sands

3,862,108

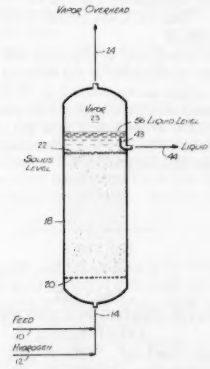
HYDROGENATION OF RESIDUUM

Edwin Tower Layng, Summit, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,573

Int. Cl. C10g *9/16, 13/02, 23/02*

U.S. Cl. 208—108 **4 Claims**



1. A process for enhancing the operability of an ebullated bed system for the hydroconversion of a residuum bitumen feedstock derived from natural tar sands and having at least 50 weight percent of hydrocarbons boiling above 975°F and composed substantially of asphaltenes, wherein the feedstock and hydrogen pass upwardly through a reaction zone containing particulate contact material having a close size range in the range of 3 to 325 mesh (U.S. Std.) under conditions to place the contact particles in randon motion in the liquid, and hydroconversion conditions are maintained in the reaction zone in a temperature range between about 750° and 850°F, and total pressures are in the range of 750–2,000 psig, and with a space velocity in the range of 0.5 to 2.0 $V_f/hr/V_r$, the improvement which comprises maintaining reaction conditions such that the liquid effluent from the reaction zone has a heptane insoluble number under 40.

3,862,109

METHOD FOR OBTAINING A PROTEIN ISOLATE FROM HYDROCARBON ASSIMILATING MICROBIAL CELLS

Hisateru Mitsuda; Kyoden Yasumoto, and Benichiro Tonomura, all of Kyoto, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 864,659, Oct. 8, 1969, abandoned. This application Jan. 5, 1973, Ser. No. 321,318

Claims priority, application Japan, Oct. 12, 1968, 43-74391; Apr. 18, 1969, 44-30103

Int. Cl. C12d *13/06;* **A23j** *3/00*

U.S. Cl. 260—112 R **19 Claims**

15. A process for separating proteins from microbial cells cultivated in hydrocarbons as a carbon source, which comprises forming an aqueous extract of dissolved proteins free of insoluble substances; adding a compound selected from the group consisting of calcium chloride, barium hydroxide and barium chloride in such an amount as to precipitate no proteins but to precipitate substances containing substantially no proteins; separating the precipitated substances from said extract; dialyzing the resultant extract solution against a liquid selected from the group consisting of water, a buffer solution and a dilute salt solution; and separating any proteins precipitated during said dialysis from the resulting dialyzate.

3,862,110

LINEAR OLIGOPEPTIDES USEFUL FOR THE PRODUCTION OF DEFERRI-FERRICHROME AND FERRICHROME

Yoshikazu Isowa, Tokyo; Toshiyuki Takashima, Ebina; Muneki Ohmori, Sagamihara; Mideaki Kurita, Sagamihara; Masanari Sato, Sagamihara, and Kaoru Mori, Sagamihara, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

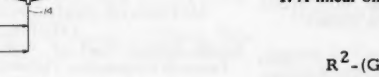
Filed Apr. 20, 1972, Ser. No. 246,022

Claims priority, application Japan, Apr. 20, 1971, 46-24909; Apr. 22, 1971, 46-25673; Apr. 23, 1971, 46-26065; Apr. 23, 1971, 46-26066; Apr. 23, 1971, 46-26067; June 9, 1971, 46-40125

Int. Cl. C07c *103/52;* **C08h** *1/00;* **A61k** *27/00*

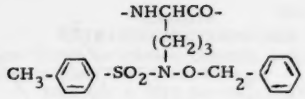
U.S. Cl. 260—112.5 **17 Claims**

1. A linear oligopeptide represented by the formula



wherein $x + y + z$ is an integer of 3 to 6, inclusive; z is equal to 0 or 1, y is an integer of 1 to 3, inclusive; z is zero or an integer of 2 to 3, inclusive; "Gly" represents a gylcine residual group;

represents the group



R^2 is selected from the group consisting of hydrogen and a protecting group for the amino group selected from the group consisting of the acyl groups t-butyloxycarbonyl, p-methoxybenzyloxycarbonyl, and carbobenzoxy; R^3 is selected from the group consisting of hydrogen and a protecting group for the carboxy group selected from the group consisting of methyl and ethyl, and acid addition salt thereof.

3,862,111

PEPTIDES OF ACTH ACTIVITY CONTAINING ALPHA-AMINOOXY CARBOXYLIC ACIDS ON BOTH TERMINALS AND A PROCESS FOR THE PREPARATION THEREOF

Miklos Low; Lajos Kisfaludy; Agnes Patthy; Maria Szirmai; Olga Nyeki; Laszlo Szporny, and Gyorgy Hajos, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszti Gyar RT., Budapest, Hungary

Filed Aug. 15, 1973, Ser. No. 388,547

Claims priority, application Hungary, Aug. 25, 1972, RI-481

Int. Cl. C07c *103/52*; **A61k** *17/06*

U.S. Cl. 260—112.5 **6 Claims**

2. A peptide containing 17 to 19 amino acid units of the N-terminal part of the adrenocorticotropic hormone, wherein the first and the last amino acids are replaced by -D-O-Ser-and-OLys-NH_2 respectively and wherein the second amino acid is tyrosine or phenylalanine, the third amino acid is serine or glycine, the fourth amino acid is methionine, leucine, norvaline, norleucine or amino butyric acid, the fifth amino acid is glutamic acid or glutamine, the fifteenth and sixteenth amino acids are lysine or ornithine, and the seventeenth and eighteenth amino acids are arginine, lysine, or ornithine.

PROTEINS

3,862,112

ALKALI EXTRACTION OF MICROBIAL CELLULAR PROTEINS AT HIGH TEMPERATURE

Masahiko Ishida; Yoshitaka Oguri; Tadashi Muroi, and Norio Shimizu, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 11, 1972, Ser. No. 287,793

Claims priority, application Japan, Sept. 10, 1971, 46-69674

Int. Cl. A23j *1/00, 1/18*; **C07g** *7/00*

U.S. Cl. 260—112 R **17 Claims**

1. A method of extracting microbial cellular proteins which comprises subjecting an aqueous dispersion containing microbial cells to extraction in the presence of about 0.1 to about 1% by weight of an extracting agent consisting essentially of an alkali substance selected from the group consisting of sodium hydroxide, potassium hydroxide, and mixture thereof at a pH of about 9.5 to about 13.5 and at a temperature of about 120° to about 200° C. and separating microbial cellular proteins from the resulting extract.

3,862,113

PROCESS FOR THE SELECTIVE ELIMINATION OF ARALKYLOXYCARBONYL AND TRITYL N-PROTECTING GROUPS WITH 2,2,2-TRIFLUOROETHANOL

Bernhard Riniker, Frenkendorf; Bruno Kamber, Basel, and Peter Sieber, Reinach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

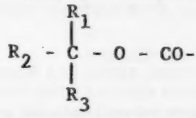
Filed Sept. 18, 1973, Ser. No. 398,506

Claims priority, application Switzerland, Sept. 22, 1972, 13865/72

Int. Cl. C07c *103/52*; **C07g** *7/00*; **C08h** *1/00*

U.S. Cl. 260—112.7 **10 Claims**

1. A process for the selective elimination of amino protective groups in peptide synthesis using the trityl group and an aralkyloxycarbonyl group of the formula I



in which R_1 represents lower alkyl, R_2 represents lower alkyl or phenyl and R_3 represents phenyl, and in which the phenyl radicals are unsubstituted or substituted by lower alkyl, lower alkoxy, phenyl, lower alkylphenyl, or lower alkoxyphenyl, wherein the trityl group is split off in 2,2,2-trifluoroethanol at a pH of 3 to 5.

3,862,114

ANALOGS OF SUBSTANCE P

Mal Scott Scandrett, Elwood, Victoria, Australia, assignor to ICI Australia Limited, Victoria, Australia

Filed Sept. 12, 1972, Ser. No. 288,337

Claims priority, application Australia, Nov. 22, 1971, 7106/71; July 25, 1972, 9835/72

Int. Cl. C07c *103/52*; **C07g** *7/00*; **A61k** *27/00*

U.S. Cl. 260—112.5 **16 Claims**

1. A peptide having between 4 and 12 inclusive amino acid residues wherein the carboxy terminal end of the peptide comprises the amino acid sequences of formula I:

$$R - Gly - Leu - Met - NH_2 \quad I$$

wherein R is a peptide fragment containing 1 to 9 amino acid residues, except that the peptide of formula I cannot be Arg-Pro-Lys-Pro-Gln-Gln-Phe-Gly-Leu-Met-NH2 and that the 4th amino acid residue from the carboxy terminal end is phenylalanine or tyrosine, when present the 5th amino acid residue is phenylalanine, glycine or tyrosine, when present the 6th amino acid residue is glutamine, or when the 4th amino acid residue is tyrosine the 6th amino acid residue may be alanine, when present the 7 th amino residue is glutamine or aspartic acid, when present the 8th amino acid residue is proline, when present the 9th amino acid residue is lysine or tyrosine, when present the 10th amino acid residue is proline, when present the 11th amino acid residue is arginine, and that when present the 12th amino acid residue is tyrosine, and wherein all amino acid residues are of the L configuration.

3,862,115

DISTORTIONLESS MAGNETIC COMPONENTS SUCH AS RECORD AND REPRODUCE HEADS

Martin E. Gerry, 13452 Wihthrope St., Santa Ana, Calif. 92705

Filed July 9, 1973, Ser. No. 377,581

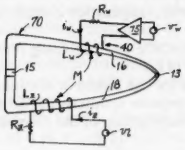
Int. Cl. G11b *5/20, 5/44, 5/22*

U.S. Cl. 360—125 **26 Claims**

1. A magnetic character memory matrix to transflux logic signals while attenuating distortion, comprising in combination:

a plurality of endless magnetizable cores, said cores being separated from and substantially parallel to each other,

each of the cores circumscribing the matrix and having a coil integral therewith, each of the coils being energized by a unique carrier frequency signal in the operational mode of the matrix for creating a different carrier flux in each said core; and



a plurality of first electrically conductive wires, separated from the plurality of cores, lying in a plane substantially parallel to the plane of the plurality of cores in direction orthogonal to said plurality cores, said first plurality of wires being fed by pulses in said operational mode, said pulses and unique carrier frequencies interacting so as to provide a plurality of logic states proportional to the number of unique carrier frequencies.

3,862,116

DEHYDROTHIO-P-TOLUIDINESULFONIC ACID AZO-HEXAHYDRO-4,6-DIOXOPYRIMIDINEUREA OR CYANAMIDE DIRECT DYES FOR PAPER

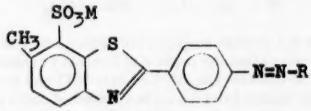
Masuo Toji, Sewell, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 3, 1972, Ser. No. 215,215

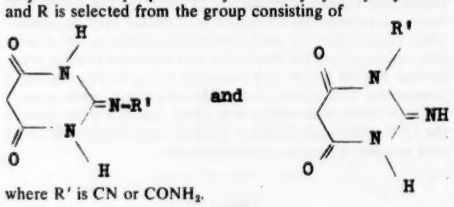
Int. Cl. C09b *29/36;* **D21h** *3/80*

U.S. Cl. 260—154 **3 Claims**

1. A dye of the structure



wherein M is H, Li, Na, K, NH_4, C_1–C_4 secondary or tertiary alkylamine or C_1–C_4 secondary or tertiary hydroxyalkylamine and R is selected from the group consisting of



where R′ is CN or $CONH_2$.

3,862,117

CYANOARYL-THIODIAZOLE-AZO DYESTUFF

Klaus Leverenz, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

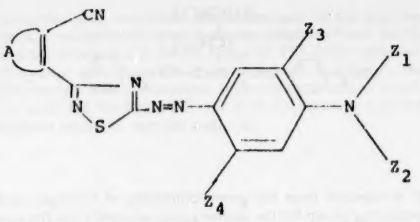
Filed Feb. 11, 1972, Ser. No. 225,618

Claims priority, application Germany, Feb. 11, 1971, 2106585

Int. Cl. C09b *39/08;* **D06p** *3/00, 3/52*

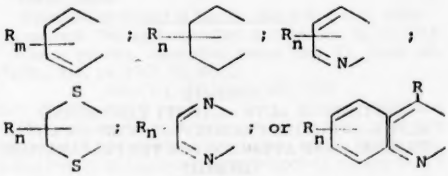
U.S. Cl. 260—158 **5 Claims**

1. Azo dyestuff of the formula



wherein

A is



R is hydrogen, C_1-C_4-alkyl, phenyl, CF_3, chloro, nitro, C_1-C_4-alkyl-SO_2-, phenyl-SO_2-, or C_1-C_4-alkoxy;

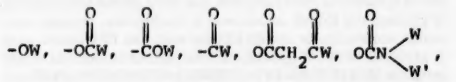
m is 1, 2, or 3;

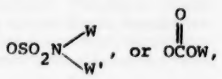
n is 1 or 2;

Z_1 and Z_2 are hydrogen, benzyl, phenylethyl, or are C_1-C_5-alkyl which is unsubstituted or substituted by chloro, nitro, cyano,

hydroxy, trimethylammonium, benzyldimethylammonium, allyldimethylammonium, pyridinium, imidazolium, triazolium,

dimethylhydrazinium,





wherein W is C_1 -C_2-alkyl, phenyl, or benzyl; and W′ is hydrogen or C_1-C_2-alkyl;

Z_3, in addition is phenyl;

Z_3 and Z_4 are hydrogen, methyl, ethyl, CF_3, chlorine,

Z_3,in addition, is phenoxy; and

Z_4, in addition, is cyano, formylamino, C_1-C_{12}-alkylcarbonylamino,

benzylcarbonylamino, phenylcarbonylamino, tolycarbonylamino,

furylcarbonylamino, thienylcarbonylamino, pyridylcarbonylamino,

methylsulphonylamino, ethylsulphonylamino, phenylsulphonylamino,

p-toylsulphonylamino, methoxycarbonylamino, phenoxycarbonylamino,

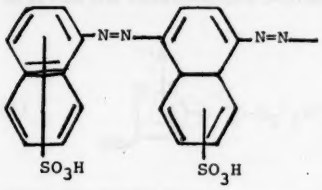
aminocarbonylamino, dimethylaminocarbonylamino, cyclohexylaminocarbonylamino, phenylaminocarbonylamino, dimethylaminosulphonylamino, or C_1-C_{12}-alkylcarbonylamino substituted by fluoro, chloro, bromo, cyano, C_1-C_4-alkoxy, phenoxy, or C_1-C_4-alkylcarbonyloxy.

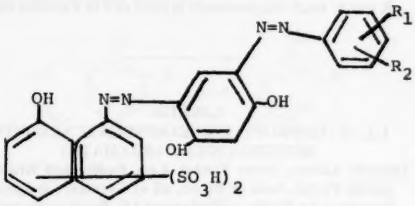
3,862,118
TETRAKISAZO COMPOUNDS

Hermann Goebel, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 4, 1972, Ser. No. 278,089
Claims priority, application Germany, Aug. 5, 1971, 2139148
Int. Cl. C09b *31/16, 31/30*
U.S. Cl. 260—166 **4 Claims**

1. Compound which in the form of the free acid has the formula





wherein

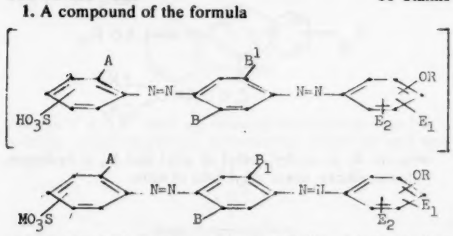
R_1 is nitro and R_2 is hydrogen or methoxy.

3,862,119
LOWER ALKYL ETHER-CONTAINING DISAZO DYES FOR NYLON

Hans Alfred Stingl, Brookside Heights, N.J., assignor to Toms River Chemical Corporation, Toms River, N.J.

Filed Aug. 9, 1968, Ser. No. 751,386
Int. Cl. C09b *31/06;* **D06p** *3/24*
U.S. Cl. 260—186 **11 Claims**

1. A compound of the formula



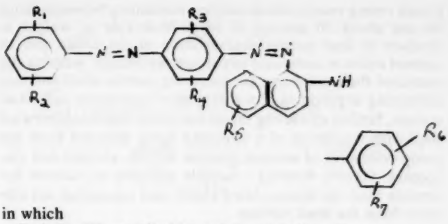
wherein M is hydrogen ammonium or alkali metal, A is hydrogen, lower alkyl, lower alkoxy or chlorine, B is hydrogen, lower alkyl, or lower alkoxy, B^1 is lower alkoxy, E_1 is hydrogen, lower alkyl, or lower alkoxy, E_2 is hydrogen, lower alkyl or lower alkoxy, R is lower alkyl, —OR is ortho or para to the azo linkage and $—SO_3M$ is meta or para to A.

3,862,120
DISAZO DYES RESISTANT TO ADSORPTION

Richard B. Orelup, Upper Saddle River, N.J., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

Filed Dec. 8, 1972, Ser. No. 313,591
Int. Cl. C09b *31/04*
U.S. Cl. 260—191 **3 Claims**

1. A disazo colorant of the formula:



in which

R_1 is H, CF_3, or alkyl having 1 to 4 carbon atoms,

R_2 is H or alkyl having from 1 to 4 carbon atoms,

R_3 and R_4 are each H, OCH_3, OC_2H_5, or CH_3, and

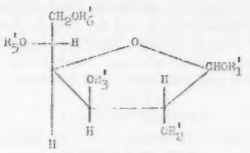
R_5, R_6 and R_7 are each H or alkyl having 1 to 12 carbon atoms, at least one of said R_5, R_6 and R_7 being alkyl.

3,862,121
ETHER AND ESTER SUBSTITUTED D-GLYCOFURANOSIDE COMPOUNDS

Roland Jaques, Allschwil; Jaroslav Stanek, Birsfelden, and Alberto Rossi, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

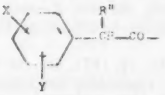
Filed Oct. 20, 1971, Ser. No. 191,084
Claims priority, application Switzerland, Nov. 13, 1970, 16792; July 20, 1971, 10652
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R **6 Claims**

1. A D-glucofuranose compound of the formula III



(III)

wherein R_1' is lower alkyl; at least one of the symbols R_2', R_3', R_5' and R_6' represents an acyl radical of the formula IV



(IV)

in which R'' represents hydrogen or lower alkyl, X represents hydrogen or a halogen atom and Y represents phenyl, a 5-membered to 8-membered cycloalkyl or cycloalkenyl group or a straight or branched chain lower alkyl group, and, of the remaining symbols, each of R_2', R_3', R_5' and R_6' represents lower alkyl, benzyl or benzyl substituted in the phenyl radical by halogen, or the acyl radical of a lower alkanecarboxylic acid, with the proviso, that if only R_2' represents a radical of the formula IV, this radical is not phenyl-acetyl, lower alkyl-phenyl-acetyl or halogeno-phenyl-acetyl.

3,862,122
METHOD OF RECOVERING CHITOSAN AND OTHER BY-PRODUCTS FROM SHELLFISH WASTE AND THE LIKE

Quintin P. Peniston, Rt. 7, Box 7710, Bainbridge Island, Wash. 98110, and Edwin Lee Johnson, Rt. 5, Box 4246, Issaquah, Wash. 98027

Filed Feb. 16, 1972, Ser. No. 226,661
Int. Cl. C07c *95/04*
U.S. Cl. 260—211 R **7 Claims**

1. A process for producing chitosan from deproteinized shell of crustacea species containing chitin and calcium carbonate, that consists essentially of, treating the deproteinized shell at a temperature between about 120° C and about 150°

C with strong caustic alkali solution containing between about 30 and about 50 percent of alkali hydroxide by weight to produce at least partial deacetylation of the chitin and to convert calcium carbonate to calcium hydroxide, washing the extracted shell to remove excess strong caustic alkali solution containing as products of reaction alkali carbonate and alkali acetate, further extracting the deacetylated and decarbonated shell with a solution of a chelating agent selected from the group consisting of sucrose, glycols, EDTA, sorbitol and gluconates, thereby forming a soluble complex of calcium hydroxide from the deacetylated chitin, and separating out chitosan from the shell residue.

3,862,123

CINCHONA ALKALOID SALTS AND COMPOSITIONS CONTAINING THEM

Rene Tixier, Paris, France, assignor to Societe Generale De Recherches Et D'Applications Scientifiques "Sageras", Paris, France

Division of Ser. No. 843,001, July 18, 1969. This application July 8, 1971, Ser. No. 160,919

Int. Cl. C07c *69/32*

U.S. Cl. 260—234 R **15 Claims**

1. A salt of a cinchona alkaloid and a polysaccharide sulphate, the alkaloid being selected from the group consisting of quinidine, hydroquinidine, quincine, cinchonicine hydroquinicine and hydrocinchonicine and the polysaccharide sulphate being selected from the group consisting of galactane sulphate or carraghenate, galactoglucane sulphate or furcellarene, dextran sulphate and arabogalactane sulphate.

3,862,124

TRIAZOLYLTHIOPHOSPHORIC ACID ESTERS

Dag Dawes, Pratteln, and Beat Boehner, Binningen, both of Switzerland, assignors to Ciba-Giegy Corporation, Ardsley, N.Y.

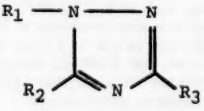
Filed Oct. 19, 1971, Ser. No. 190,695

Claims priority, application Switzerland, Oct. 22, 1970, 15608/70; Sept. 15, 1971, 13471/71

Int. Cl. C07d *55/06*

U.S. Cl. 260—308 R **15 Claims**

1. A compound of the formula:

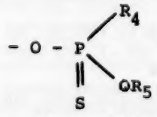


(I)

wherein

R_1 represents a lower alkyl radical, cyclopentyl, cyclohexyl, or a $(X)_n—C_6H_{5-n}$ radical wherein X is chlorine or bromine and n is a number from 0 to 2, of the symbols

R_2 and R_3 any one represents hydrogen, a lower alkyl radical, cyclopentyl, cyclohexyl, a phenyl radical, or chlorophenyl, and the other then represents the radical:



wherein R_4 represents a lower alkyl radical or the phenyl radical, and R_5 represents a lower alkyl radical.

3,862,125

N,N-DIMETHYL-O-[ALKYL-3-ALKYLMERCAPTO-1,2,4-RIAZOLYL(5)]-CARBAMIC ACID ESTERS

Hellmut Hoffman, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

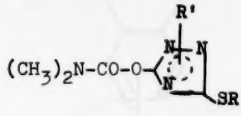
Filed Sept. 19, 1973, Ser. No. 398,628

Claims priority, application Germany, Oct. 14, 1972, 2250572

Int. Cl. C07d *55/06*

U.S. Cl. 260—308 R **7 Claims**

1. An N,N-dimethyl-O-triazolyl-carbamic acid ester of the formula



(I)

in which

R and R′ each independently is alkyl of 1 to 6 carbon atoms.

3,862,126

1,3,-DI-(ISOPROPYLIDENEAMINOOXYCARBONYL) BENZINDAZOLE CARBAMATES

Dietrich Ahrens, Gross Flothe; Kurt Roder, and Ernst Albrecht Pieroh, both of Berlin, all of Germany, assignors to Scherings Ag, Berlin and Scherings AG, Bergkamen, both of, Germany

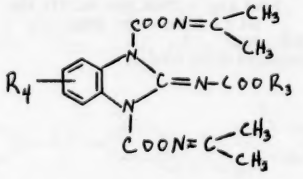
Filed Apr. 19, 1972, Ser. No. 245,644

Claims priority, application Germany, May 5, 1971, 2123015

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **6 Claims**

1. A compound of the formula:



wherein R_3 is methyl, ethyl or allyl and R_4 is hydrogen, lower alkoxy, lower alkyl halo or nitro.

3,862,127

PROCESS

Roger L. Miller, Rochester; James H. Sharp, Webster, both of N.Y., and Marcel A. Lardon, Trubbach, Switzerland, assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 756,362, Aug. 30, 1968, abandoned, and a continuation-in-part of Ser. No. 847,381, Aug. 4, 1969, abandoned. This application July 14, 1972, Ser. No. 271,868

Int. Cl. C09b *47/04*

U.S. Cl. 260—314.5 **4 Claims**

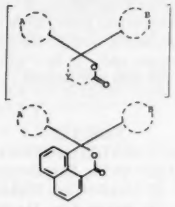
1. A method for preparing the X-form of metal-free phthalocyanine which comprises rapidly sublimating an unsubstituted alpha or beta polymorph of metal-free phthalocyanine at a pressure of about 1 to about 90 Torr.

3,862,128
NAPHTHALIDE INDICATOR DYES

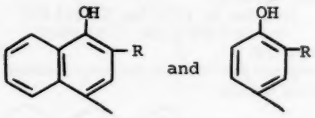
Richard B. Greenwald, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 2, 1971, Ser. No. 204,350
Int. Cl. C07d 27/56
U.S. Cl. 260—326.12 R 13 Claims

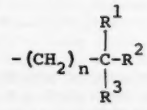
1. An indicator dye having the formula



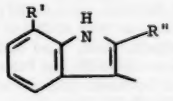
wherein A is selected from



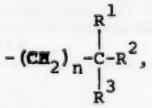
and R is the group



wherein R^1 is —OH, R^2 is hydrogen, alkyl having 1 to 20 carbon atoms, aryl selected from phenyl and naphthyl, alkaryl having up to 20 carbon atoms or perhalomethyl, R^1 and R^2 when taken together represent =O, R^3 is perhalomethyl, and *n* is an integer O or 1; and B is



wherein R′ and R″ each are selected from hydrogen; carboxy, hydroxy, o-hydroxyphenyl, sulfonamido, sulfamoyl and said group



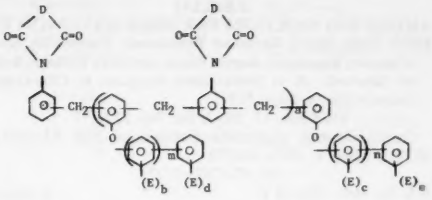
at least one of R′ and R″ being hydrogen.

3,862,129
NOVEL HALOAROMATIC ETHERAMINES

George T. Kwiatkowski, Green Brook, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 12, 1973, Ser. No. 322,984
Int. Cl. C07d 27/18
U.S. Cl. 260—326.26 9 Claims

1. Haloaromatic imide represented by the formula:



wherein

E is a halogen selected from the group consisting of fluorine, chlorine, and bromine;

a is an integer having average values of **0** to **5**;

b and *c* are each integers having values of **1** to **4**;

d and *e* are each integers having values of **1** to **5**;

m and *n* are each integers having values of **0** to **3**; and

D is

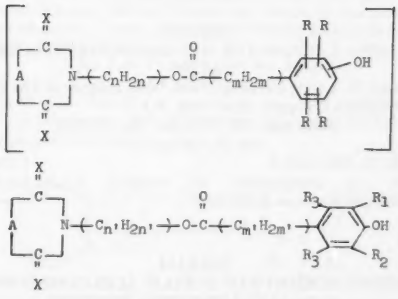
wherein each of R′ and R″ is a monovalent radical selected from the group consisting of hydrogen, chlorine and lower alkyl groups having up to **8** carbon atoms.

3,862,130
ALKYLHYDROXYP HENYLCARBOALKOXY-SUBSTITUTED NITROGEN HETEROCYCLES

George Kletecka, Lakewood, and Peter D. Smith, Cleveland, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Division of Ser. No. 225,294, Feb. 10, 1972, Pat. No. 3,810,912. This application June 1, 1973, Ser. No. 365,990
Int. Cl. C07d 27/00
U.S. Cl. 260—326.43 4 Claims

1. An alkylhydroxyphenylcarboalkoxy-substituted nitrogen heterocycle having the formula



wherein *n′* is an integer from 1 to 3, *m′* is an integer from 1 to 3, R_1 is a tertiary alkyl group containing 4 to 8 carbon atoms, R_2 is an alkyl group containing 1 to 8 carbon atoms, R_3 is hydrogen, X is oxygen, and A is a bivalent alkylene radical.

3,862,131

AMINES AND PROCESSES FOR THEIR MANUFACTURE

Dieter Beck, Basel; Raymond Bernasconi, Oberwil/Bl; Karl Schenker, Binningen; Angelo Storni, and Max Wilhelm, both of Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

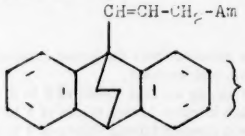
Filed Feb. 17, 1972, Ser. No. 227,277

Claims priority, application Switzerland, Feb. 23, 1971, 2577/71; Jan. 7, 1972, 668/72

Int. Cl. C07c *87/78*

U.S. Cl. 260—326.14 T 6 Claims

1. A compound of the formula



wherein Am is a mono- or di-lower alkylamino group or a hydroxy-lower alkylamino group in which alkyl has up to 7 carbon atoms, or a cycloalkylamino group with from 3 to 7 ring members, and R_1 is a lower alkyl or alkoxy group having up to 7 carbon atoms, a trifluoromethyl group, halogen or hydrogen atom, and pharmaceutically acceptable scope thereof.

3,862,132

OPTICAL RESOLUTION OF DL-2-PYRROLIDONE-5-CARBOXYLIC ACID

Masaaki Iida, Yokohama; Hideo Tazuke, Tokyo, and Hiroo Kageyama, Kanagawa-ken, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 7, 1972, Ser. No. 232,501

Claims priority, application Japan, Mar. 13, 1971, 46-13531

Int. Cl. C07d *27/72*

U.S. Cl. 260—326.45 2 Claims

1. A process for optically resolving lithium DL-2-pyrrolidone-5-carboxylate into its optically active enantiomorphs, which comprises the step of:

contacting a supersaturated solution of lithium DL-2-pyrrolidone-5-carboxylate with crystals of one or both of the optically active enantiomorphs of said lithium DL-2-pyrrolidone-5-carboxylate with the provision that when seed crystals of both enantiomorphs are used simultaneously they are separable from each other on a particle size basis.

3,862,133

GAMMA-LACTONES OF O-HYDROXYPHENYLACETIC ACIDS

Robert W. Layer, Cuyohoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,508

Int. Cl. C07d *5/34*

U.S. Cl. 260—343.3 1 Claim

1. A composition of matter, 4,7-di-t-butyl-5-hydroxybenzofuran-2(3H)-one.

3,862,134

PHENYLBENZOFURAN ACRYLIC ACID COMPOUNDS AND SALTS AND ESTERS THEREOF

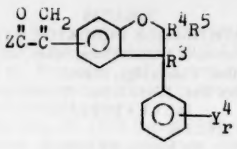
Robert A. Scherrer, White Bear Lake, Minn., assignor to Riker Laboratories, Inc., Northbridge, Calif.

Filed Nov. 16, 1971, Ser. No. 199,318

Int. Cl. C07d *5/34*

U.S. Cl. 260—346.2 R 7 Claims

1. A compound of the formula



wherein Z is hydroxyl or lower alkoxy; R^3 and R^4 are hydrogen or together, a carbon-carbon bond; R^5 is hydrogen or lower alkyl, provided that when R^3 and R^4 form a bond, R^5 may be halogen; Y^4 is halogen; and r is 0–1 and pharmaceutically acceptable salts of the acid compounds.

3,862,135

AMINOACYLOCTAHYDROMORPHANTHRIDINES

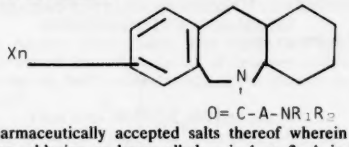
Edward Simon, 4 Andrews Pl., East Brunswick, N.J. 08904; David B. Reisner, 68 Meadow Dr., Hightstown, N.J. 08520; John F. Schaefer, 624 Paxson Ave., Mercerville, N.J. 08619; Bernard J. Ludwig, 1159 Stockton Pl., North Brunswick, N.J. 08540, and Frank M. Berger, 145 Constitution Dr., Princeton, N.J. 08540

Filed Jan. 19, 1973, Ser. No. 325,172

Int. Cl. C07d *41/08*, *57/00*, *99/02*

U.S. Cl. 260—239 D 20 Claims

1. A compound selected from the group consisting of compounds of the formula:



and pharmaceutically accepted salts thereof wherein X is hydrogen, chlorine or lower alkyl; n is 1 or 2; A is lower alkylene; R_1 and R_2 are hydrogen or lower alkyl, or R_1 and R_2 taken together with the nitrogen atom to which they are attached are morpholino, piperidino or 4 methylpiperazino ring systems.

3,862,136

2-HALO-5-PHENYL-4H-3,5-DIHYDRO-1,5-BENZODIAZEPIN-4-ONES AND SALTS THEREOF

Adolf Bauer, Ingelheim/Rhein; Karl Heinz Weber; Klaus Minck, both of Gau-Algesheim, and Peter Danneberg, Ingelheim/Rhein, all of Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim, Germany

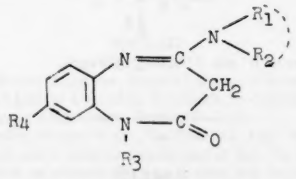
Filed Oct. 29, 1971, Ser. No. 194,001

Claims priority, application Germany, Nov. 2, 1970, 2053680

Int. Cl. C07d *53/04*

U.S. Cl. 260—239.3 B 1 Claim

1. A compound of the formula



wherein R_1 and R_2 are each hydrogen, straight or branched alkyl of 1 to 4 carbon atoms, di-lower alkylamino-(alkyl of 1 to 4 carbon atoms), hydroxy-(alkyl of 1 to 4 carbon atoms), alkenyl of 2 to 4 carbon atoms or, together with each other and the nitrogen atom to which they are attached, piperidino, N′-tolylpiperazino or N′-methyl-piperazino,

R_3 is phenyl, o-halo-phenyl, o-nitro-phenyl or o-trifluoromethyl-phenyl, and

R_4 is halogen, nitro or trifluoromethyl, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

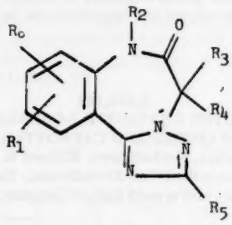
3,862,137

S-TRIAZOLO(1,5-D)BENZODIAZEPIN-6(7H)-ONES

Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz, Inc., Hanover, N.J.

Filed Mar. 5, 1973, Ser. No. 338,340
Int. Cl. C07d *53/06, 55/06, 99/02*
U.S. Cl. 260—239.3 T **24 Claims**

1. A compound of the formula



wherein

R_o and R_1 each independently represent hydrogen, halo having an atomic weight of about 18 to 80, alkyl of 1 to 4 carbon atoms, provided that at least one of R_o and R_1 is halo, preferably chloro, when R_2 is hydrogen, and

R_2 is hydrogen, alkyl of 1 to 4 carbon atoms, and

R_3 is hydrogen, alkyl of 1 to 4 carbon atoms, unsubstituted phenyl or phenyl mono-substituted with halo having an atomic weight of 18 to 80

R_4 is hydrogen or alkyl of 1 to 4 carbon atoms, and

R_5 is hydrogen, alkyl of 1 to 4 carbon atoms, unsubstituted phenyl or mono-substituted phenyl as defined above.

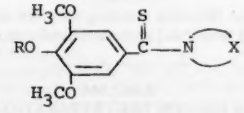
3,862,138

HETEROCYCLIC THIOAMIDES OF 4-SUBSTITUTED SYRINGIC ACID AND THEIR PREPARATION

Giorgio Pifferi, Milan, Italy, assignor to I.S.F.S.P.A., Milan, Italy

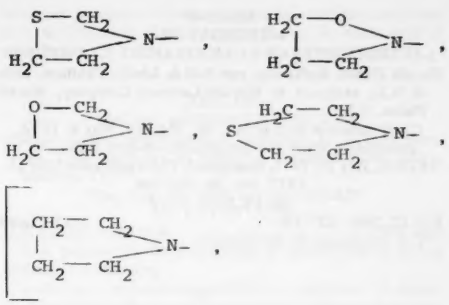
Division of Ser. No. 93,460, Nov. 27, 1970, Pat. No. 3,755,317. This application Feb. 1, 1973, Ser. No. 328,693
Claims priority, application Italy, July 31, 1970, 28164/70
Int. Cl. C07d *93/10, 91/16, 85/08*
U.S. Cl. 260—243 B **5 Claims**

1. A thioamide of a 4-substituted syringic acid of the formula



wherein R represents CH_3—, C_2H_5—, CH_3CO—, or C_2H_5OCO—, and

is selected from the group consisting of



3,862,140

4-HYDROXY-2H-1-BENZOTHIOPYRAN-3-CARBOXAMIDE 1,1-DIOXIDES

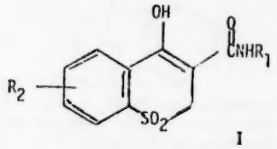
Harold Zinnes, Rockaway, and Neil A. Lindo, Chatham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 251,311, May 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 163,076, July 15, 1971, abandoned. This application May 31, 1973, Ser. No. 365,786

Int. Cl. C07d 65/14

U.S. Cl. 260—327 TH 11 Claims

1. A compound of the formula:



I

wherein R_1 is aryl, or aryl substituted by alkyl, aryl, aralkyl, alkoxy, halogen, cyano, nitro or trifluoromethyl; R_2 is alkyl, aryl, aralkyl, alkoxy, halogen, cyano, nitro, or trifluoromethyl in which "aryl" is of six to 10 carbon atoms, "alkyl" is of one to six carbon atoms and "alkoxy" is of one to six carbon atoms, or its pharmaceutically acceptable base salts. 2. A compound according to claim 1 which is 4-hydroxy-2H-1-benzothiopyran-3-carboxanilide 1,1-dioxide or its pharmaceutically acceptable base salts.

3,862,141

1-SUBSTITUTED 1,2,3,4-TETRAHYDROXANTHEN-9-ONES

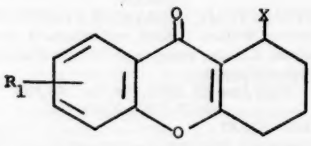
Sylvester Klutchko, Hackettstown; Maximilian Von Strandtmann, Rockaway, and John Shavel, Jr., Mendham, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 23, 1973, Ser. No. 390,961

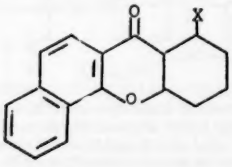
Int. Cl. C07d 7/44

U.S. Cl. 260—335 9 Claims

1. A compound of the formula



and



wherein X is hydroxy or carbonyl oxygen, and R_1 is hydrogen, halogen, lower alkyl or lower alkoxy.

3,862,142

METHOD OF REDUCTIVE OZONOLYSIS OF OLEFINS TO PRODUCE CARBONYL COMPOUNDS AND INTERMEDIATE PRODUCTS

Paul R. Story, Athens, Ga.; E. A. Whited, Corpus Christi, Tex.; J. A. Alford, Athens, Ga.; Wesley C. Ray, Parkerburg, W. Va., and John R. Burgess, Kingsport, Tenn., assignors to Research Corporation, New York, N.Y.

Filed June 15, 1972, Ser. No. 262,326

Int. Cl. C07d 11/00

U.S. Cl. 260—338 3 Claims

1. A method for the reductive ozonolysis of an olefin selected from the group consisting of ethylidene cylcohexane, 2-methylbutene, cyclopentene, indene and trans or cis-diisopropylethylene, comprising the step of reacting said olefin with ozone at a temperature of between about 0° C and about −100° C, in the presence of a molar excess of a solvent selected from the group consisting of pinacolone, propionaldehyde, cyclohexanone and butyraldehyde, in an inert atmosphere.

3,862,143

SUBSTITUTED CHROMONE-3-CARBONITRILES, CARBOXAMIDES AND CARBOXYLIC ACIDS

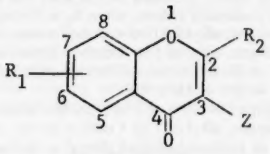
Sylvester Klutchko, Hackettstown; Richard E. Brown, Hanover, and Maximilian Von Strandtmann, Rockaway, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 4, 1972, Ser. No. 312,154

Int. Cl. C07d 7/34

U.S. Cl. 260—345.2 30 Claims

1. A compound of the formula:



wherein R_1 represents hydrogen, halogen, lower alkyl, hydroxy, lower alkoxy, or lower alkanoyloxy; R_2 represents hydrogen, lower alkyl, fluorinated lower alkyl, lower alkoxycarbonyl, carboxy, or lower alkyl carboxylic acid; Z represents cyano, carboxy, lower alkoxycarbonyl or

wherein X represents amino, N-lower-alkylamino, hydroxylamino, N-lower-alkylhydroxylamino, or ureido, with the proviso that when R_2 represents hydrogen, Z represents cyano of

wherein X has the same meaning as given above; and the corresponding non-toxic, pharmaceutically acceptable salts.

3,862,144

PROCESS FOR THE PREPARATION OF GAMMA-PYRONE-3-CARBOXALDEHYDES

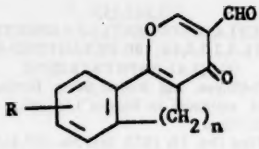
Daniel Kaminsky, Parsippany, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 18, 1973, Ser. No. 351,912

Int. Cl. C07d 7/32

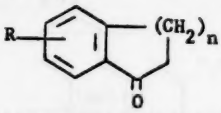
U.S. Cl. 260—345.2 1 Claim

1. A process for the production of compounds of the formula I:



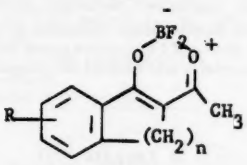
I

wherein R represents hydrogen, hydroxy, lower alkyl, or lower alkoxy and *n* represents 1 or 2, which comprises treating a compound of the formula II:



II

wherein R represents hydrogen, lower alkyl, lower alkoxy, or lower acyloxy, and *n* represents 1 or 2, with an acetic anhydride and a boron trifluoride compound, to provide an intermediate of the formula III:



III

wherein R represents hydrogen, lower alkyl, lower alkoxy, or lower acyloxy and *n* represents 1 or 2, and treating intermediate III with a Vilsmeier reagent prepared from phosphorus oxychloride and dimethylformamide, followed by hydrolysis.

3,862,145

PREPARATION OF PHTHALIC ANHYDRIDE BY HEATING TRIMELLITIC ACID IN THE PRESENCE OF A CATALYST

Harry M. Brennan, Naperville, and Douglas P. Lamb, Mount Prospect, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Sept. 27, 1971, Ser. No. 184,232
Int. Cl. C07c *63/18, 63/17*
U.S. Cl. 260—346.4 **4 Claims**

1. A process for the preparation of orthophthalic acid or phthalic anhydride by heating trimellitic acid, formed from the liquid phase oxidation of 1,2,4-trialkylbenzene, in the presence of a catalyst system consisting of an element or mixture of elements selected from cobalt, manganese and cerium, and bromine, to a temperature in the range of 300°–325° C. to produce an overhead product consisting of a high concentration of orthophthalic acid, which upon further heating produces phthalic anhydride.

3,862,146

OXIDATION OF BUTANE TO MALEIC ANHYDRIDE

Edward M. Boghosian, Fort Lee, N.J., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 215,176, Jan. 3, 1972, abandoned. This application Oct. 27, 1972, Ser. No. 301,613
Int. Cl. C07c *55/10*
U.S. Cl. 260—346.8 A **12 Claims**

1. A process for the preparation of maleic anhydride which comprises: contacting a feedstock consisting essentially of 50% at least n-butane and a gas containing molecular oxygen in the vapor phase with a catalyst complex consisting essentially of phosphorus, vanadium, oxygen and a metal activator selected from zinc, copper, bismuth, lithium or a mixture of these, said catalyst complex comprising from about 0.5 to 5 atoms of phosphorus for each atom of vanadium and from 0.05 to 0.5 atoms of said metal activator for each atom of vanadium.

3,862,147

MALEIC ANHYDRIDE PROCESS

Stone D. Cooley, and Andrew K. Schwartz, Jr., both of Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Aug. 25, 1972, Ser. No. 283,639
Int. Cl. C07c *57/14*
U.S. Cl. 260—346.8 M **5 Claims**

1. A process for the preparation of maleic acid or maleic anhydride comprising

oxidizing a hydrocarbon which is a precursor of maleic anhydride to form a vaporous reactor effluent comprising maleic anhydride,

scrubbing said vaporous reactor effluent with water to obtain an aqueous composition comprising maleic acid and fumaric acid with at least 40 weight per cent water,

feeding said aqueous composition to the middle one-third of a refluxing distillation column having a temperature in the stillpot between 100° and 230°C.,

feeding n-butanol in stoichiometric excess based on esterifiable acid to said column at a point higher in said column than the point of feed of the crude aqueous solution,

taking off a vaporous overhead portion containing a mixture of said n-butanol and water having a temperature between about 80° and 200°C., and

recovering a bottoms portion from the stillpot containing dehydrated maleic and fumaric acids, and esters of maleic and fumaric acids.

3,862,148

P-(-)-(CIS-1,2-EPOXYPROPYL)-ISOHYPOPHOSPHORIC ACID COMPOUNDS

Burton G. Christensen, Scotch Plains, and Raymond A. Firestone, Fanwood, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sept. 11, 1968, Ser. No. 759,246
Int. Cl. C07f *9/38*
U.S. Cl. 260—348 R **2 Claims**

1. P-(−) (cis-1,2-epoxypropyl)isohypophosphoric acid and metal and amine salts thereof.

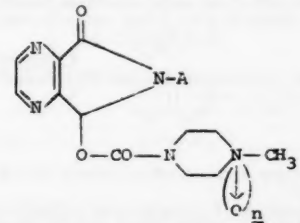
3,862,149

PYRROLO (3,4-B) PYRAZINE DERIVATIVES

Claude Cotrel, Val-de-Marne; Claude Jeanmart, and Mayer Naoum Messer, both of Essonne, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Dec. 29, 1972, Ser. No. 319,876
Claims priority, application France, Jan. 7, 1972, 72.00505; Nov. 9, 1972, 72.39731
Int. Cl. C07d *51/72*
U.S. Cl. 260—268 BQ **9 Claims**

1. A pyrrolo[3,4-b]pyrazine of the formula:



wherein A is a phenyl, pyridyl, pyridazinyl or 2-, 3-or 4-quinolyl radical, or a said radical substituted by a member of the class consisting of halogen, alkyl of 1 through 4 carbon

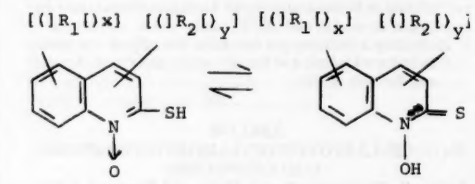
atoms, and nitro, and *n* is zero or 1, or non-toxic acid addition salts thereof.

3,862,150
DELAYED POLYURETHANE ACTION CATALYSTS
Ibrahim S. Bechara, Boothwyn, and Dewey G. Holland, Chadds Ford, both of Pa., assignors to Air Products and Chemicals, Inc., Wayne, Pa.
Filed Sept. 26, 1972, Ser. No. 292,344
Int. Cl. C07d *53/00*
U.S. Cl. 260—268 T **1 Claim**

1. A salt of triethylenediamine and cyanoacetic acid.

3,862,151
MERCAPTO QUINOLINE N-OXIDES AND THEIR USE IN COMBATTING DANDRUFF
Thomas E. Furia, Hartsdale, and David H. Steinberg, Bronx, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 842,377, July 16, 1969, Pat. No. 3,723,435. This application Jan. 22, 1973, Ser. No. 325,712
Int. Cl. C07d *33/62*
U.S. Cl. 260—270 R **4 Claims**

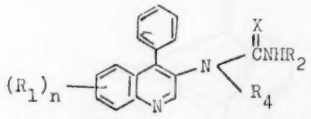
1. A compound selected from the group consisting of compounds having the following structural formula in tautomeric form:



and metal salts and complexes thereof wherein R_1 and R_2 are each independently selected from the group consisting of hydrogen, alkyl of one to 24 carbon atoms, phenyl, phenyl substituted with chlorine or methyl, halogen, trifluoromethyl and alkoxy of one to four carbon atoms; and wherein the metal is selected from lithium, sodium, potassium, calcium.

3,862,152
3-CARBAMOYLAMINO-4-PHENYL QUINOLINE COMPOUNDS
Yutaka Kuwada; Kanji Meguro, and Hiroshi Miyano, all of Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed June 23, 1972, Ser. No. 265,740
Claims priority, application Japan, July 31, 1971, 46-57704
Int. Cl. C07d *33/50*
U.S. Cl. 260—283 S **18 Claims**

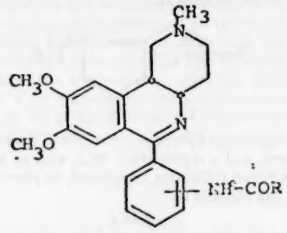
1. A compound of the formula:



wherein:
R_1 : hydrogen, methyl, methoxy, halogen, nitro or trifluoromethyl
n : 1 except when R_1 is methoxy and 2 when R_1 is methoxy
R_2 : hydrogen, methyl, benzyl, benzoyl, phenyl or para chlorophenyl
X : oxygen or sulfur
R_4 : hydrogen or methylcarbamoylamino.

3,862,153
CIS-6-(ACYLAMINOPHENYL)-8,9-DIMETHOXY-2-METHYL-1,2,3,4,4A, 10B-HEXAHYDRO-BENZO [C]-[1,6] NAPHTHYRIDINE
Hans Ott, Pfeffingen, and Rudolf Suess, Bettingen, both of Switzerland, assignors to Sandoz Ltd. a/k/a Sandoz AG, Basle, Switzerland
Filed Oct. 18, 1973, Ser. No. 407,418
Int. Cl. C07d *35/10*
U.S. Cl. 260—287 R **7 Claims**

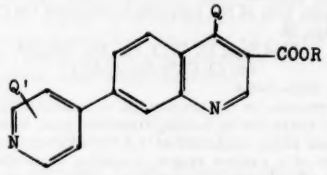
1. A compound of the formula,



wherein R is dichloromethyl, cycloalkyl of 3 to 6 carbon atoms or alkenyl of 2 to 5 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

3,862,154
4-CHLORO-7-(4-PYRIDYL)-3-QUINOLINECARBOXYLATES
Roman R. Lorenz, East Greenbush, and R. Pauline Brundage, Schodack, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.
Division of Ser. No. 263,787, June 19, 1972, Pat. No. 3,840,544. This application Nov. 23, 1973, Ser. No. 418,189
Int. Cl. C07d *33/48*
U.S. Cl. 260—287 R **3 Claims**

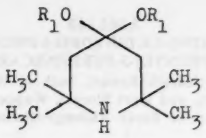
1. A compound of the formula



where Q is halo, R is lower-alkyl and Q' is hydrogen or from one to two non-tertiary lower-alkyl groups.

3,862,155
4,4-DI-ALKOXY-2,2,6,6-TETRAMETHYL PIPERIDINES
Keisuke Murayama; Toshimasa Toda; Eika Mori; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Onta, and Ichiro Watanabe, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan
Division of Ser. No. 219,133, Jan. 19, 1972, Pat. No. 3,790,525. This application Mar. 1, 1973, Ser. No. 336,982
Int. Cl. C07d *29/18*
U.S. Cl. 260—293.9 **2 Claims**

1. A compound having the formula



wherein R_1 represents an alkyl group of 1 to 8 carbon atoms.

3,862,156

4H-BENZO[4,5]CYCLOHEPTA[1,2-6]THIOPHENES

Jean-Pierre Bourquin, Magden; Gustav Schwarb, Allschwil, and Erwin Waldvogel, Aesch, all of Switzerland, assignors to Sandoz Ltd., a/k/a Sandoz AG, Basel, Switzerland

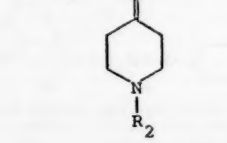
Filed Sept. 5, 1972, Ser. No. 286,281

Claims priority, application Switzerland, Jan. 24, 1972, 986/72; Jan. 24, 1972, 988/72; Jan. 24, 1972, 990/72; Jan. 24, 1972, 992/72

Int. Cl. C07d *63/18*

U.S. Cl. 260—293.57 16 Claims

1. A compound of the formula:



wherein

R_1 is hydrogen, chlorine, bromine or alkoxy of 1 to 4 carbon atoms and is in the 6 or 7 position of the benzocycloheptathiophene nucleus;

R_2 is alkyl of 1 to 4 carbon atoms; benzyl; fluoro, chloro or bromo substituted benzyl; diphenylmethyl; or fluoro, chloro or bromo substituted diphenylmethyl; and either one of

A and B is hydroxymethylene or hydroxyiminomethylene and the other is methylene; or, each of

A and B is carbonyl; or, when R_2 is benzyl; fluoro, chloro or bromo substituted benzyl; diphenylmethyl; or fluoro, chloro or bromo substituted diphenylmethyl; then one of A and B is carbonyl and the other is methylene;

in free base or pharmaceutically acceptable acid addition salt form.

3,862,157

2-(DIALKYLAMINO, PYRROLIDINO OR PIPERIDINO)-3-AMINO-5-NITRO PYRIDINES

Erik Wiskott, Bottmingen, Basel-Land, Switzerland, assignor to Therachemie Chemisch Therapeutische GmbH, Dusseldorf, Germany

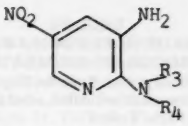
Division of Ser. No. 75,305, Sept. 24, 1970,. This application Oct. 19, 1973, Ser. No. 408,089

Claims priority, application Germany, Oct. 2, 1969, 1949750

Int. Cl. C07d *29/28*

U.S. Cl. 260—293.69 4 Claims

1. A 3-amino-5-nitropyridine having the formula



wherein R_3 and R_4 are members selected from the group consisting of alkyl having 1 to 4 carbon atoms, hydroxyalkyl having 2 to 4 carbon atoms, and, when taken together, alkylene having 4 to 5 carbon atoms.

3,862,158

PIPERIDINE ETHERS

Albrecht Edenhofer, Riehen, and Hans Spiegelberg, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

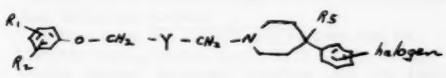
Division of Ser. No. 237,539, March 23, 1972, Pat. No. 3,790,583, which is a division of Ser. No. 882,298, Dec. 4, 1969, Pat. No. 3,674,799. This application Oct. 3, 1973, Ser. No. 403,135

Claims priority, application Switzerland, Dec. 24, 1968, 19268/68

Int. Cl. C07d *29/30*

U.S. Cl. 260—293.77 5 Claims

1. A compound of the formula



wherein R_1 is hydrogen, amino, mono-(lower alkyl)-amino, lower alkanoyl amido, p-chlorobenzoylamide, N- lower alkyl-lower alkanoyl-amido, lower alkyl sulfonyl-amido, carbamoyl or ureido; R_2 is hydrogen, halogen, lower alkyl or lower alkoxy; R_3 is hydrogen or hydroxy; and Y is methylene, hydroxymethylene, lower alkanoyloxymethylene, lower alkyl sulfonyl oxymethylene, phenyl sulfonyl oxymethylene, lower alkylphenyl sulfonyloxy methylene or carbonyl, or a pharmaceutically acceptable acid addition salt thereof.

3,862,159

5-(HALOALKYL) PICOLINIC ACID AND DERIVATIVES

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Koichi Miyano, Omiya; Hiroaki Hamano, Higashi-Murayama, and Wataru Tanaka, Hoya, all of Japan, assignors to Zaiden Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

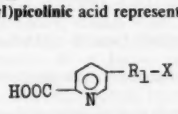
Filed Feb. 6, 1973, Ser. No. 330,027

Claims priority, application Japan, Feb. 7, 1972, 47-12840; May 30, 1972, 47-52956; June 1, 1972, 47-53785

Int. Cl. C07d *31/36*

U.S. Cl. 260—295 R 3 Claims

1. A 5-(haloalkyl)picolinic acid represented by the general formula,



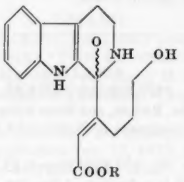
wherein R_1 represents an alkylene group having 3 to 6 carbon atoms and X represents a halogen atom, provided that the halogen atom is attached to the terminal carbon atom of the carbon chain or to the carbon atom at position 3' in the case of a four-carbon chain.

3,862,160
DERIVATIVES OF 9H-PYRIDO(3,4-B) INDOLE AND PROCESS OF PREPARATION

Jacques Martel, Bondy; Jean Buendia, Nogent-sur-Marne, and Germain Costerousse, Vernouillet, all of France, assignors to Roussel Uclaf, Paris, France

Filed July 24, 1973, Ser. No. 382,061
Claims priority, application France, July 31, 1972, 72.27501
Int. Cl. C07d 27/54
U.S. Cl. 260—295 C 6 Claims

1. A derivative of 1,2,3,4-tetrahydro-9H-pyrido [3,4-b] indole of the formula;



(I)

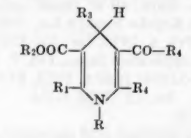
in which R represents an alkyl radical having from 1 to 4 carbon atoms.

3,862,161
4-PYRIDYL SUBSTITUTED 1,4-DIHYDROPYRIDINES

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 107,849, Jan. 19, 1971, Pat. No. 3,775,422. This application Mar. 23, 1973, Ser. No. 344,344
Claims priority, application Germany, Jan. 24, 1970, 2003146
Int. Cl. C07d 31/36
U.S. Cl. 260—295.5 R 4 Claims

1. A 1,4-dihydropyridine of the formula:



wherein

R is hydrogen, alkyl of one to six carbon atoms, benzyl or phenethyl,

R_1 is straight or branched chain alkyl of one to four carbon atoms,

R_2 is mono- or dialkyl of one to six carbon atoms, propargyl, cyclic alkyl of three to six carbon atoms, alkyl of two to six carbon atoms interrupted by oxygen, or furfuryl,

R_3 is pyridyl or pyridyl substituted by an alkyl of one or two carbon atoms,

R_4 is straight or branched chain alkyl of one to four carbon atoms.

3,862,162
CERTAIN-2-AMINO-1,4-DIHYDRO-4-PHENYL-6-LOWER ALKYL (OR PHENYL)-3-PYRIDINECARBOXYLATES

Horst Meyer; Friedrich Bossert, both of Wuppertal; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 21, 1973, Ser. No. 390,194
Claims priority, application Germany, Aug. 31, 1972, 2242786
Int. Cl. C07d 31/36
U.S. Cl. 260—295.5 R 11 Claims

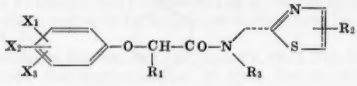
2. The compound according to claim 1 which is 2-amino-6-methyl-4-phenyl-1,4-dihydropyridine-3-carboxylic acid ethyl ester.

3,862,163
PHENOXYCARBOXYLIC ACID AMIDES

Gerhard Boroschewski, Berlin, and Friedrich Arndt, Aich, both of Germany, assignors to Schering AG, Bergkamen, Germany

Filed Sept. 27, 1972, Ser. No. 292,674
Claims priority, application Germany, Oct. 14, 1971, 2151766; Feb. 10, 1972, 2206822
Int. Cl. C07d 91/26, 91/34
U.S. Cl. 260—306.7 T 43 Claims

1. A herbicidal compound of the formula



wherein

R_1 is hydrogen or methyl;

R_2 is hydrogen or lower alkyl;

R_3 is hydrogen, lower alkyl, or lower alkenyl;

X_1, X_2, and X_3 are equal or different and are hydrogen, lower alkyl, or halogen; and

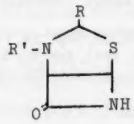
said lower alkyl and lower alkenyl having up to four carbon atoms and wherein the dotted line represents and optional bond.

3,862,164
THIAZOLIDINE AZETIDINONES

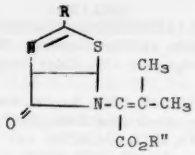
Robin D. G. Cooper, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 3, 1971, Ser. No. 112,389
Int. Cl. C07d 99/10
U.S. Cl. 260—306.7 C 5 Claims

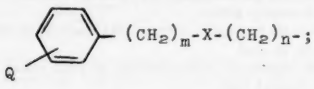
1. A method for the preparation of a thiazolidine azetidinone having the formula

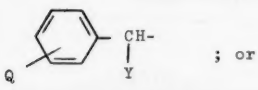


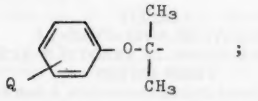
from a thiazoline azetidinone having the formula



wherein R is hydrogen;
methoxy;
carboethoxy;
C_1–C_8 alkyl, optionally substituted with hydroxy, mercapto, C_1–C_3 alkoxy, C_1–C_3 alkylthio, or cyano;
C_2–C_8 alkenyl, optionally substituted with hydroxy, mercapto, C_1–C_3 alkoxy, C_1–C_3 alkylthio, or cyano;
C_3–C_8 cycloalkyl, optionally substituted with hydroxy, mercapto, C_1–C_3 alkoxy, C_1–C_3 alkylthio, or cyano;







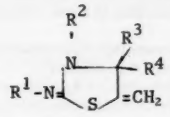
Q is hydrogen, hydroxy, mercapto, chloro, bromo, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, nitro or cyano;
X is oxygen, sulfur, or a carbon to carbon bond;
Y is hydroxy, mercapto, or amino;
m is an integer of 0 to 2;
n is an integer of 1 to 2;
R′ is hydrogen,

trimethylsilyl, trichloroethoxycarbonyl, t-butoxycarbonyl, or benzyloxycarbonyl; and
R″ is C_1–C_8 alkyl, C_4–C_8 t-alkyl, C_5–C_8 t-alkenyl, C_5–C_8 t-alkynyl, benzyl, benzhydryl, trityl, p-nitrobenzyl, p-methoxybenzyl, trimethylsilyl, phthalimidomethyl, succinimidomethyl, or trichloroethyl;
which comprises the steps of
A. treating with ozone at −80° to −20°C. to convert the side-chain double bond to a carbonyl group, thereby forming an imide;
B. after the ozonolysis, treating with a C_1–C_3 alkanol at 0° to +80° C. to hydrolyze the imide;
C. treating with aluminum amalgam or sodium borohydride at 0° to 50° C. to reduce the double bond of the thiazoline ring; and
D. after reduction of the double bond, optionally treating with an agent which will replace the hydrogen attached to the nitrogen of the thiazolidine ring with

trimethylsilyl, trichloroethoxycarbonyl, t-butoxycarbonyl, or benzyloxycarbonyl.

3,862,165
NEW 2-IMINO-5-METHYLENETHIAZOLIDINES
August Amann, 30 Parkstrasse; Horst Koenig, 4 Neuwiesenstrasse, both of, 6700 Ludwigshafen, and Peter Thieme, 4 Mutterstadter Graben, 6701 Ruchheim, all of Germany
Filed Sept. 21, 1972, Ser. No. 291,097
Int. Cl. C07d *91/18*
U.S. Cl. 260—306.7 T **8 Claims**

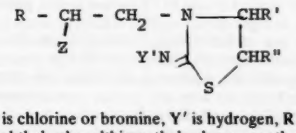
1. New 2-imino-5-methylenethiazolidines of the formula



where
R^1 denotes RCO- and R denotes methyl, phenyl, chlorophenyl, 3,4,5-trimethoxyphenyl or ethoxy,
R^2 denotes hydrogen or lower alkyl,
R^3 denotes hydrogen or lower alkyl,
R^4 denotes hydrogen or alkyl of up to 8 carbon atoms,
or R^3 and R^4 together denote spirocycloalkyl-$(CH_2)_4$ to $_8$ or spirobicycloalkyl-C_nH_{2n-2} where *n* is one of the integers 6, 7 and 8, and their pharmaceutically useful salts.

3,862,166
CERTAIN 3-HALOETHYL-2-IMINOTHIAZOLIDINE
Asbjorn Baklien, Kingsbury, Victoria, and Jan Kolm, Kew, Victoria, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia
Division of Ser. No. 565,092, July 14, 1966, Pat. No. 3,759,937. This application Apr. 3, 1972, Ser. No. 240,827
Claims priority, application Australia, July 19, 1965, 61653/65; July 26, 1965, 61931/65; Aug. 31, 1965, 63415/65; Sept. 8, 1965, 63786/65
Int. Cl. C07d *91/18*
U.S. Cl. 260—306.7 T **4 Claims**

1. A compound of the formula



wherein Z is chlorine or bromine, Y′ is hydrogen, R is phenyl, benzyl, naphthyl, phenylthiomethyl, phenoxymethyl, thienyl, pyridyl, furyl, or thiazolyl substituent; R′ and R″ which may be the same or different are hydrogen, or alkyl containing from 1 to 6 inclusive carbon atoms and wherein R″ is hydrogen whenever R′ is hydrogen and wherein whenever R is hydrogen R′ is not hydrogen.

3,862,167
CERTAIN
2-ACYLAMINE-4-METHYL-5-HALOTHIAZOLES
Kisaburo Ueno, Kamakura; Masato Koshi, Yokohama; Fujio Tada, Yokohama; Akira Hirose, Yokohama, and Yoshio Takazawa, Chigasaki, all of Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan
Division of Ser. No. 798,117, Feb. 10, 1969, Pat. No. 3,515,538, and a continuation-in-part of Ser. No. 570,710, Aug. 8, 1966, abandoned. This application Dec. 23, 1969, Ser. No. 887,757
Claims priority, application Japan, Aug. 11, 1965, 40-48410
Int. Cl. C07d *91/34*
U.S. Cl. 260—306.8 R **4 Claims**

1. 2-Propionylamino-4-methyl-5-chlorothiazole.

3,862,168
1,2,4-OXADIAZOLES

Kurt Findeisen; Kuno Wagner, and Hans Holtschmidt, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 29, 1971, Ser. No. 194,005
Claims priority, application Germany, Nov. 5, 1970, 2054342
Int. Cl. C07d 85/52
U.S. Cl. 260—307 G 12 Claims

1. Compounds according to claim 1 selected from the group of

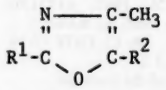
3-chloro-5-trichloromethyl-1,2,4-oxadiazole;
3,3'-chloro-5-bis-1,2,4-oxadiazole;
3-chloro-5-chloromethyl-1,2,4-oxadiazole,
3-pentachloroethyl-5-trichloromethyl-1,2,4-oxadizaole; and
3,5-dichloro-1,2,4-oxadiazole.

3,862,169
PRODUCTION OF 4-METHYLOXAZOLES

Volkmar Weberndorfer, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

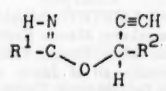
Filed Oct. 16, 1972, Ser. No. 297,596
Claims priority, application Germany, Oct. 21, 1971, 2152367
Int. Cl. C07d 85/44
U.S. Cl. 260—307 R 8 Claims

1. A process for the production of a 4-methyloxazole of the formula:



(I)

wherein R^1 is alkyl of one to 18 carbon atoms, phenyl, cycloalkyl of five to eight carbon atoms, aralkyl of seven to 12 carbon atoms, or one of said radicals bearing a substituent which is inert under the reaction conditions of the process, said substituent being chlorine, hydroxyl, alkyl with one to four carbon atoms, dialkylamino with one to four carbon atoms per alkyl group, carbalkoxy with one to four carbon atoms in the alkoxy group, alkoxy with one to four carbon atoms, or acyloxy with one to four carbon atoms; R^2 is hydrogen, alkyl of one to 18 carbon atoms, phenyl, or either said alkyl or phenyl respectively bearing a substituent which is inert under the reaction conditions of the process, said substituent being chlorine, hydroxyl, alkyl with one to four carbon atoms, dialkylamino with one to four carbon atoms per alkyl group, carbalkoxy with one to four carbon atoms in the alkoxy group, alkoxy with one to four carbon atoms, or acyloxy with one to four carbon atoms, wherein an imino ether of a propargyl alcohol of the formula:



(II)

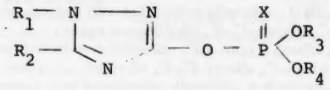
where R^1 and R^2 have the meanings given above is cyclized in the presence of a catalytic amount of a silver, mercury, copper, zinc or cadmium salt of sulfuric acid, phosphoric acid, nitric acid, hydrochloric acid, boric acid, cyclohexanecarboxylic acid, benzoic acid, phenylacetic acid, benzenesulfonic acid, toluenesulfonic acid, chloroacetic acid, acrylic acid, oxalic acid, formic acid, acetic acid, propionic acid, adipic acid or maleic acid at a temperature of from 30° to 2502 C.

3,862,170
TRIAZOLYLPHOSPHORIC ACID ESTERS

Dag Dawes, Pratteln, and Beat Boehner, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 19, 1971, Ser. No. 190,674
Claims priority, application Switzerland, Oct. 22, 1970, 15609/70; Sept. 15, 1971, 13472/70
Int. Cl. C07d 55/06
U.S. Cl. 260—308 R 7 Claims

1. A compound of the formula:



wherein

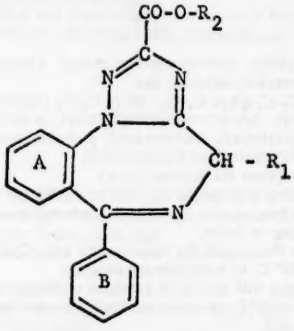
R_1 represents a lower alkyl or cycloalkyl radical containing 3 to 6 carbon atoms,
R_2 represents hydrogen, a lower alkyl radical, or the phenyl radical, R_3 and
R_4 each represent, independently of each other, a lower alkyl radical, and
X represents oxygen or sulphur.

3,862,171
6-PHENYL-4H-S-TRIAZOLO(1,5-A)(1,4)BENZODIAZEPINE-2-CARBOXYLIC ACIDS AND THEIR ESTERS

Andre Gagneux, Basel; Roland Heckendorn, Arlesh Eim Basel-Land, and Rene Meier, Buus, Basel-Land, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,779
Claims priority, application Switzerland, Apr. 8, 1971, 5232/71
Int. Cl. C07d 57/02
U.S. Cl. 260—308 R 19 Claims

1. A compound of the formula I,



(I)

wherein

R_1 represents hydrogen or a lower alkyl group,
R_2 represents hydrogen or a lower alkyl group and wherein each of the rings A and B, independently of the other, is unsubstituted or mono-substituted by fluorine, chlorine and/or bromine atoms, alkyl or alkoxy groups each having 1 to 6 carbon stoms, trifluoromethyl groups and/or nitro groups;

or a salt of a carboxylic acid embraced by the formula I with an inorganic or organic base.

3,862,172

3,3-DICHLORO-2-OXOPOLYMETHYLENIMINES

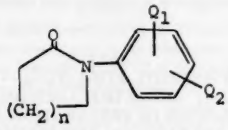
Joseph C. Collins, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 113,669, Feb. 8, 1971, Pat. No. 3,708,473, which is a continuation-in-part of Ser. No. 862,084, Sept. 29, 1969, Pat. No. 3,647,782, which is a continuation-in-part of Ser. No. 673,926, Oct. 9, 1967, Pat. No. 3,549,654. This application Aug. 11, 1972, Ser. No. 280,072

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 R 10 Claims

1. A compound of the formula



where Q_1 is trihalomethyl or trifluoromethoxy; Q_2 is hydrogen, halo or trihalomethyl; and n is an integer from 1 to 3 inclusive.

3,862,173

OLEFINIC 4-SUBSTITUTED PIPERIDINO DERIVATIVES

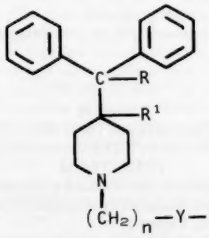
Albert A. Carr, Cincinnati, and C. Richard Kinsolving, Terrace Park, both of Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

Filed Jan. 28, 1972, Ser. No. 221,820

Int. Cl. C07d *29/20*

U.S. Cl. 260—240 R 16 Claims

1. A compound selected from a base of the formula



wherein R and R^1 each represent hydrogen; or R and R^1 together form a second bond between the carbon atoms bearing R and R^1; *n* is a positive whole integer of from 1 to 3; Y is selected from the group consisting of —CH=CH— and

with the proviso that when each of R and R^1 represents hydrogen, Y represents —CH=CH—, and when Y represents —CH=CH—, *n* is equal to 2; Z is selected from the group consisting of thienyl, phenyl, or substituted phenyl wherein the substituents on the substituted phenyl may be attached at the ortho, meta, or para positions of the substituted phenyl ring and are selected from the group consisting of an halogen atom, a straight or branched lower alkyl chain of from 1 to 4 carbon atoms, a lower alkoxy group of from 1 to 4 carbon atoms, a di(lower)alkylamino group, or a saturated monocyclic heterocyclic ring selected from the group consisting of pyrrolidino, piperidino, morpholino and N-(lower)alkylpiperazino; and pharmaceutically acceptable acid addition salts thereof.

3,862,174

CYCLOPROPANECARBOXYLATES

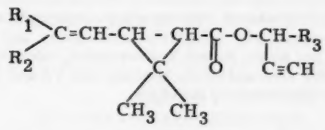
Toshio Mizutani; Nobushige Itaya; Nobuo Ohno, all of Osaka; Takashi Matsuo, Amagasaki; Shigeyoshi Kitamura, and Yositosi Okuno, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

Filed June 26, 1972, Ser. No. 266,046

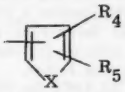
Int. Cl. C07d *5/14*

U.S. Cl. 260—240 R 26 Claims

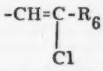
1. A cyclopropanecarboxylate of the formula:



wherein R_1 is methyl, R_2 is lower alkoxymethyl, lower alkenoxymethyl, lower alkynoxymethyl or acyl selected from lower alkanoyl, lower alkenylcarbonyl or lower alkynylcarbonyl or, when taken together with the adjacent carbon atom, R_1 and R_2 may represent a cyclic ketone group having 4 to 6 carbon atoms and R_3 is a group of the formula:



wherein R_4 is lower alkyl, lower alkenyl, lower alkynyl, benzyl, thenyl, furylmethyl, phenoxy or phenylthio, R_5 is hydrogen or lower alkyl or R_4 and R_5 may link together to form a polymethylene chain having 3 to 4 carbon atoms and X is oxygen, sulfur or vinylene, or a group of the formula:



wherein R_6 is benzyl, thenyl or furylmethyl.

3,862,175

BIS-CHROMONE COMPOUNDS

Colin Fitzmaurice, Macclesfield, and Thomas Brian Lee, Loughborough, both of England, assignors to Fison House, London, England

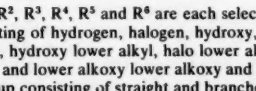
Continuation-in-part of Ser. No. 762,638, Sept. 25, 1968, Pat. No. 3,686,320, which is a division of Ser. No. 536,281, March 22, 1966, Pat. No. 3,419,578. This application July 19, 1972, Ser. No. 273,169

Claims priority, application Great Britain, Mar. 25, 1965, 12626/65; Dec. 9, 1965, 52414/65

Int. Cl. C07d *7/34*

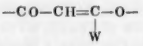
U.S. Cl. 260—240 D 4 Claims

1. A compound of the formula

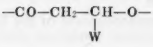


wherein R^1, R^2, R^3, R^4, R^5 and R^6 are each selected from the group consisting of hydrogen, halogen, hydroxy, lower alkyl, lower alkoxy, hydroxy lower alkyl, halo lower alkyl, hydroxy lower alkoxy and lower alkoxy lower alkoxy and X is selected from the group consisting of straight and branched, saturated and unsaturated hydrocarbon chains of 1 to 12 carbon atoms which are uninterrupted or interrupted by a member selected from the group consisting of benzene, oxygen and carbonyl and are unsubstituted or substituted by a member of the group

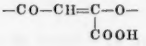
consisting of halogen, hydroxy and lower alkoxy, and YZ and Y'Z' are selected from the groups



and



in which W is selected from the group consisting of carboxy, and therapeutically acceptable salts, esters and amides thereof, and nitrile, methyl, hydroxymethyl, halomethyl, formyl, acetyl, vinyl and styryl, providing that YZ and Y'Z' are not both simultaneously the chain



or a therapeutically acceptable salt, ester or amide thereof.

3,862,176

DERIVATIVES OF 5-CINNAMOYL BENZOFURAN

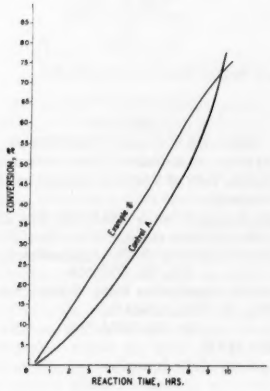
Claude P. Fauran, Paris; Jeannine A. Eberle, Chatou; Guy M. Raynaud, Paris, and Bernard M. Pourrias, Meudon La Foret, all of France, assignors to Delalande S.A., Courbevoie Hauts-de-Seine, Regnault, France

Filed Aug. 23, 1972, Ser. No. 283,055

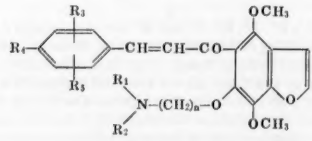
Claims priority, application France, July 18, 1972, 72.25879; Aug. 25, 1971, 71.30853

Int. Cl. C07d *5/40*

U.S. Cl. 260—240 J **5 Claims**



1. A compound of the formula



in which

is dimethylamino, diethylamino, diisopropylamino, pyrrolidino, piperidino, morpholino or perhydroazepino;

n is 2 or 3; and

R_3, R_4 and R_5 are H, alkoxy having 1 to 4 carbon atoms, halogen or hydroxy, with the proviso that at least one of R_3, R_4 and R_5 is hydroxy;

or a pharmocologically acceptable acid addition salt thereof.

3,862,177

NOVEL 1-(2'-BENZOYL ETH-1'-YL)-2-(4''-CINNAMYL PIPERAZIN-1''-YL METHYL) BENZIMIDAZOLES, THEIR PROCESS OF PREPARATION AND THEIR THERAPEUTIC APPLICATION

Claude P. Fauran, Paris; Jeannine A. Eberle, Chatou; Albert-Yves Le Cloarec, Saint-Maur; Nicole A. M. Dorme, and Guy M. Raynaud, both of Paris, all of France, assignors to Delalande S. A., Courbevoie (Hauts de Seine), France

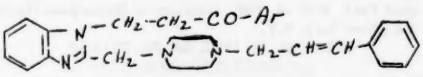
Filed July 2, 1973, Ser. No. 376,135

Claims priority, application France, July 6, 1972, 72.24544

Int. Cl. C07d *49/38*

U.S. Cl. 260—240 K **6 Claims**

1. A compound of the formula



in which Ar represents a phenyl radical optionally substituted:

by a halogen atom,

by one or two methyl groups, or

by one or more alkoxy groups containing up to 4 carbon atoms.

3,862,178

PROCESS FOR THE PRODUCTION OF CYCLOPENTENE INTERMEDIATE AND INTERMEDIATES OBTAINED THEREFROM

Edward Douglas Brown, and Richard Clarkson, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

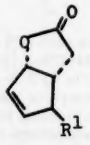
Filed Apr. 30, 1973, Ser. No. 355,734

Claims priority, application Great Britain, May 10, 1972, 21798/72

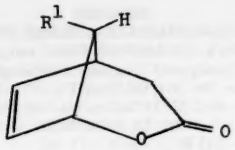
Int. Cl. C07d *5/06*

U.S. Cl. 260—240 R **6 Claims**

1. A process for the production of cyclopentene intermediates of the formula:



wherein R^1 is selected from the group consisting of dialkoxymethyl of 3 to 8 carbon atoms and 3-(tetrahydropyran-2-yloxy)-1-trans-alkenyl wherein the alkenyl part is of 4 to 11 carbon atoms, which intermediates are useful for the manufacture of prostaglandins, or prostaglandin-like compounds, of the A-series or of the 11-desoxy series, which comprises reacting an oxabicyclo-octene of the formula:



wherein R^1 has the meaning stated above, with an acid.

3,862,179

2-STILBENYL-4-STYRYL-V-TRIAZOLES

Guglielmo Kabas, Binningen; Hans Schlaepfer, Basie, and Ian John Fletcher, Muenchenstein, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

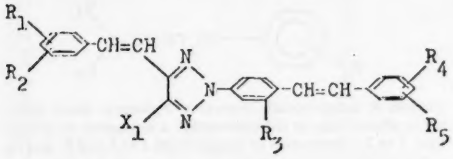
Filed Mar. 22, 1972, Ser. No. 237,204

Claims priority, application Switzerland, Mar. 31, 1971, 4702/71

Int. Cl. C07d *55/02*

U.S. Cl. 260—240 C **3 Claims**

1. A 2-Stilbenyl-4-styryl-triazole of the formula



wherein X_1 denotes hydrogen, halogen, methyl phenyl, or phenyl substituted by methyl, ethyl, t-butyl, methoxy, ethoxy or chlorine; R_1 denotes hydrogen, halogen, alkyl with 1 to 4 carbon atoms, phenyl or phenyl substituted by methyl, ethyl, t-butyl, methoxy, ethoxy or chorine; or alkoxy with 1 to 4 carbon atoms, or together with R_2 in the o-position denotes a fused benzene ring, R_2 denotes hydrogen, halogen, alkyl with 1 to 4 carbon atoms or alkoxy with 1 to 4 carbon atoms, or together with R_1 in the o-position denotes a fused benzene ring, R_3 denotes hydrogen, a nitrile group, or a radical of formula —COOZ, $-CON(Z_1Z_2)$, $-SO_3Z'$, $-SO_2Z_3$ or $-SO_2N(Z_1Z_2)$ where

Z is hydrogen, alkyl of 1 to 18 carbon atoms, phenyl, phenyl substituted by chloror, methoxy, ethoxy, methyl, ethyl or t-butyl; or benzyl,

Z_1 is hydrogen, alkyl or 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms where the terminal carbon atom contains an N,N-dialkylamino group where the alkyl groups each are of 1 to 4 carbon atoms or Z_1 is phenyl or phenyl substituted by methyl, ethyl, t-butyl, methoxy, ethoxy or chlorine;

Z_2 is hydrogen, alkyl of 1 to 6 carbon atoms, or Z_1, Z_2 and the nitrogen atom form morpholinyl or morpholinyl substituted by alkyl of 1 to 4 carbon atoms,

Z_3 is alkyl of 1 to 4 carbon atoms, phenyl or phenyl substituted by methyl, ethyl, t-butyl, methoxy, ethoxy or chlorine;

Z′ is a substituent as defined for Z or is alkali metal, ammonium or amino; R_4 denotes hydrogen, halogen, a nitrile group, alkyl with 1 to 4 carbon atoms, phenyl, or phenyl substituted by methyl, ethyl, t-butyl, methoxy, ethoxy or chlorine; alkoxy with 1 to 4 carbon atoms, or a radical of formula —COOZ, $-CON(Z_1Z_2)$, $-SO_3Z'$, $-SO_2Z_3$ or $-SO_2N(Z_1Z_2)$ where

Z is hydrogen, alkyl of 1 to 18 carbon atoms, phenyl, phenyl substituted by chloro, methoxy, ethoxy, methyl, ethyl or t-butyl; or benzyl,

Z_1 is hydrogen, alkyl of 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms where the terminal carbon atom contains an N,N-dialkylamino group where the alkyl groups each are of 1 to 4 carbon atoms or Z_1 is phenyl or phenyl substituted by methyl, ethyl, t-butyl, methoxy, ethoxy or chlorine;

Z_2 is hydrogen, alkyl of 1 to 6 carbon atoms, or Z_1, Z_2 and the nitrogen atom form morpholinyl or morpholinyl substituted by alkyl of 1 to 4 carbon atoms,

Z_3 is alkyl of 1 to 4 carbon atoms, phenyl or phenyl substituted by methyl, ethyl, t-butyl, methoxy, ethoxy or chlorine;

Z′ is a substituent as defined for Z or is alkali metal, ammonium or amino; and R_5 denotes hydrogen, alkyl with 1 to 4 carbon atoms or alkoxy with 1 to 4 carbon atoms.

3,862,180

2H-1,4-BENZOXAZIN-3(4H)-ONES

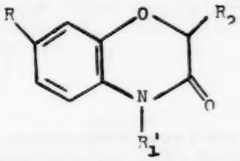
Jane Liu Jernow, Verona, and Perry Rosen, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 31, 1973, Ser. No. 365,663

Int. Cl. C07d *87/32*

U.S. Cl. 260—242 **12 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of hydrogen, halogen, lower alkyl, phenyl and tolyl; R_1' signifies hydroxy, lower alkoxy or benzyloxy; R_2' signifies hydroxy, lower alkoxy or an acetyl protected glucoside group, with the proviso that if R signifies hydrogen, at least one of R_1' and R_2' is other than hydroxy and, when R_1' is hydroxy, the salts thereof with transition metals.

3,862,181

PROCESS FOR PREPARING CEPHALOSPORINS

D. Barry Davis, New Hope, Pa.; Ekkehard Bohme, Hightstown, and Joseph Edward Dolfini, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 84,946, Oct. 28, 1970, abandoned. This application July 8, 1971, Ser. No. 160,935

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C **16 Claims**

1. A process which comprises heating at a temperature of about 70°C. to about 145°C. a 1-oxide of a Schiff base of 6-aminopenicillanic acid, with the carboxyl group protected, in the presence of an acidic, amine salt, or basic catalyst.

3,862,182

PROCESS TO PREPARE NOVEL ANTIBIOTIC INTERMEDIATES

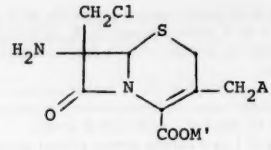
David B. R. Johnston, Warren, N.J., assignor to Merck and Co., Inc., Rahway, N.J.

Filed Oct. 11, 1972, Ser. No. 296,692

Claims priority, application Great Britain, Oct. 29, 1971, 50491/71

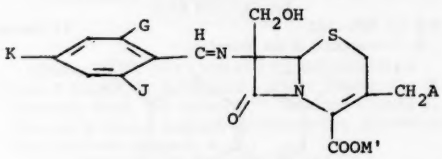
U.S. Cl. 260—243 C **5 Claims**

1. The process of preparing a compound having the formula:



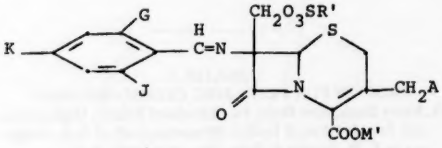
wherein M′ is benzyl, benzhydryl, trimethylsilyl, trichloroethyl, methoxymethyl, benzoylmethyl, or methoxybenzyl; A is hydrogen, loweralkanoyloxy, carbamoyloxy, thiocarbamoyloxy, N-loweralkylcarbamoyloxy, N,N-diloweralkylcarbamoyloxy, N-loweralkylthiocarbamoyloxy, or N,N-diloweralkylthiocarbamoyloxy;

which comprises the steps of reacting a compound of the formula:

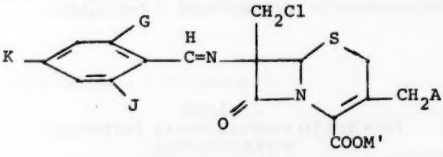


wherein M′ and A are as defined above;

and wherein each of G, K, and J are hydrogen, halo, nitro, methyl sulfonyl, carboxyester, carboxyamide, or cyano, with p-nitrobenzenesulfonyl chloride, p-toluenesulfonyl chloride, methanesulfonyl chloride, or trifluoromethanesulfonic anhydride in the presence of a tertiary loweralkyl amine to yield a compound having the formula:



wherein K, G, J, A and M′, are the same as above, and R′ is p-nitrophenyl, p-methylphenyl, methyl or trifluoromethyl; reacting said latter product with lithium chloride, to produce a compound of the formula:



where K, G, J and A, are as previously defined; and treating said product with aniline hydrochloride, or hydrazine, phenylhydrazine, 2,4-dinitrophenylhydrazine in the presence of a catalytic amount of a mineral acid such as hydrochloric or p-toluenesulfonic acid; and thereafter recovering the desired product.

3,862,183

1,3,4-THIADIAZINE HERBICIDES

William C. Doyle, Jr., Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 361,366, May 17, 1973. This application Apr. 25, 1974, Ser. No. 464,282

Int. Cl. C07d *93/22*

U.S. Cl. 260—243 R **5 Claims**

1. N,N′-dimethyl-N′-(5-tert.butyl-6H-1,3,4-thiadiazin-2-yl)urea.

3,862,184

N-SUBSTITUTED-1-(ARYLSULFINYL AND ARYLSULFONYL)METHANESULFONAMIDES

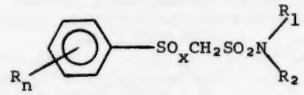
Christian T. Goralski, and Thomas C. Klingler, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 5, 1973, Ser. No. 337,866

Int. Cl. C07d *87/46, 29/34;* **C07c** *143/78*

U.S. Cl. 260—247.1 R **13 Claims**

1. A compound represented by the formula



wherein R independently represents hydrogen, lower alkyl, lower alkoxy, halo or trifluoromethyl; *x* represents an integer from 1 to 2; *n* represents an integer from 1 to 3 and R_1 and R_2 independently represent hydrogen or lower alkyl and together with the nitrogen atom form a heterocycle of the group of morpholine and piperidine.

3,862,185

PREPARATION OF AMIDES

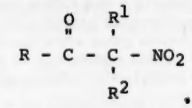
Richard F. Love, Fishkill, and John M. Larkin, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,238

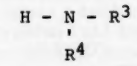
Int. Cl. C07d *87/34*

U.S. Cl. 260—247.7 H **30 Claims**

1. A method for the preparation of amides which comprises contacting a vicinal nitroketone corresponding to the formula:



where R is an alkyl group having from 1 to 20 carbon atoms or an aryl group of from 6 to 20 carbon atoms, where R^1 and R^2 are hydrogen, alkyl groups having from 1 to 20 carbon atoms or aryl groups of from 6 to 20 carbon atoms or where R and R^2 together form a polymethylene radical of from 1 to 22 carbons with a member selected from the group consisting of ammonia, primary amines and secondary amines corresponding to the formula:



where R^3 and R^4 are hydrogen, alkyl, cycloalkyl or aryl groups of from 1 to 12 carbons or where R^3 and R^4 together with N are heterocyclic at a temperature of from about 60° to 130°C., wherein from 1 to 200 moles of said member are contacted per mole of said nitroketone.

3,862,186
PROCESS FOR THE PRODUCTION OF CEPHALEXIN MONOHYDRATE

Herbert Horatius Silvestri, Dewitt, N.Y., assignor to Bristol-Myers Co., New York City, N.Y.

Continuation-in-part of Ser. No. 315,777, Dec. 15, 1972, abandoned. This application Jan. 22, 1973, Ser. No. 325,798

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **9 Claims**

1. The process of producing the relatively water-insoluble crystalline form of cephalexin monohydrate exhibiting essentially the following X-ray diffraction data:

Interplanar Spacing d (A)	Relative Intensities I/I_1
	.19
12.07	1.00
10.82	.13
9.64	.03
8.83	.07
8.53	.13
8.10	.26
7.07	.08
6.10	.14
5.60	.22
5.43	.64
4.98	.17
4.76	.09
4.57	.17
4.39	.18
4.23	.18
4.02	.30
3.94	.13
3.86	.19
3.79	.04
3.70	.05
3.61	.18
3.44	.08
3.24	.10
3.20	.05
3.11	.13
2.99	.08
2.91	.09
2.80	.07
2.73	.07
2.67	.09

which comprises preparing a concentrated, acidic aqueous solution of cephalexin, adding sufficient n-butanol to form two liquid phases and then slowly neutralizing said biphasic system to precipitate said water-insoluble crystalline form of cephalexin monohydrate.

3,862,187
N-SUBSTITUTED DERIVATIVES OF 3-CARBOXAMIDE AND 3-THIOCARBOXAMIDE 7-(3-CHLORO-2-PROPENYL)-1,3,5,7-TETRAAZABICYCLO (3.3.1) NONANE AND PREPARATION

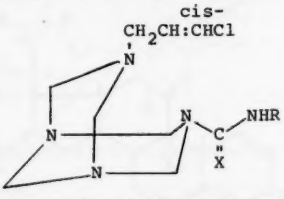
Alberta B. Mitchell, Framingham, and Charles E. Moppett, West Medway, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 13, 1973, Ser. No. 397,180

Int. Cl. C07d *55/14*

U.S. Cl. 260—248 NS **19 Claims**

1. A compound corresponding to the formula



wherein X represents O or S and R represents lower alkyl, 5 to 8 carbon atom cycloalkyl, phenyl or substituted-phenyl having lower alkyl, lower alkoxy, halo or sulfonyl substition.

3,862,188
PYRIMIDINYL PHOSPHORIC AND THIOPHOSPHORIC ACID ESTERS

Karlheinz Milzner, Basel, and Fritz Reisser, Therwil, both of Switzerland, assignors to Sandoz Ltd. (a/k/a Sandoz AG), Basel, Switzerland

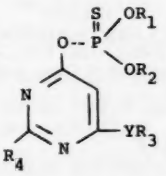
Filed Feb. 28, 1972, Ser. No. 230,043

Claims priority, application Switzerland, Mar. 4, 1971, 3190/71; Jan. 12, 1972, 429/72; Aug. 20, 1971, 12298/71; Jan. 12, 1972, 430/72

Int. Cl. C07d *51/36, 51/40*

U.S. Cl. 260—251 P **11 Claims**

1. A compound of the formula:



wherein

R_1 and R_2 , which are the same, are methyl or ethyl,

R_3 is methyl, ethyl, n-propyl or isopropyl,

R_4 is methyl, ethyl, n-propyl, isopropy or n-butyl, and

Y is oxygen or sulfur.

3,862,189
ARALKYL-SUBSTITUTED PURINES AND PYRIMIDINES AS ANTIANGINAL BRONCHODILATOR AGENTS

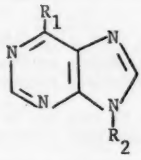
Charles F. Schwender, Lebanon, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 14, 1973, Ser. No. 388,290

Int. Cl. C07d *57/38*

U.S. Cl. 260—252 **20 Claims**

1. A compound of the formula I:



I

wherein R_1 is, chloro, hydroxy, mercapto, alkoxy of 1 to 6 carbon atoms, hydrazino, amino, amino substituted by one or two alkyl groups each of 1 to 6 carbon atoms, amino substituted by 1-naphthylmethyl or benzyl, or hydroxy-alkylamino of 1 to 6 carbon atoms and R_2 is 1-naphthylmethyl, phenylmethyl, and phenylethyl substituted on the phenyl group by two or three alkoxy groups of 1 to 6 carbon atoms, 2 or 3 alkyl groups of 1 to 6 carbon atoms, or two chloros and pharmaceutically acceptable salts thereof.

3,862,190
5-(UNSUBSTITUTED AND SUBSTITUTED PHENOXY)-4-MINO PYRIMIDINES

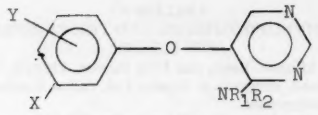
Christopher Andrew Lipinski, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Sept. 8, 1972, Ser. No. 287,423

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 N **5 Claims**

1. A compound selected from the group consisting of 5-(unsubstituted and substituted phenoxy(-4- substituted amino pyrimidines of the formulae:



and the pharmaceutically-acceptable acid addition salts,

wherein X and Y are each hydrogen, chlorine, bromine, fluorine, alkyl containing from 1 to 6 carbon atoms, trifluoromethyl or alkoxy containing from 1 to 3 carbon atoms in the alkyl moiety;

R_1 and R_2 are alkyl containing from 1 to 6 carbon atoms.

3,862,191

PYRIDO[2,3-D]PYRIMIDIN-4(3H)-ONE

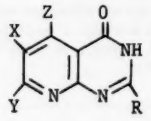
Marwan J. Abu El-Haj, Gales Ferry, and Beryl William Dominy, Extension, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Sept. 27, 1972, Ser. No. 292,645

Int. Cl. C07d *51/46*

U.S. Cl. 260—256.4 F **2 Claims**

1. A compound selected from the group consisting of those of the formula



and the alkali metal and the mono-, di- and trialkylamine salts wherein each alkyl group has from 1 to 12 carbon atoms, thereof, wherein R is selected from the group consisting of alkyl having from 3 to 5 carbon atoms, cycloalkyl having from 3 to 5 carbon atoms and $—CF_2R_1$ wherein R_1 is selected from the group consisting of F, Cl, H and —CLMN wherein L, M and N are each selected from the group consisting of H, F and Cl; X is alkyl having 3 to 4 carbon atoms and Y and Z are each hydrogen.

3,862,192

FIBRE-REACTIVE ANTHRAQUINONE COMPOUNDS

Hansrudolf Schwander, Riehen, and Peter Hindermann, Rottmingen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

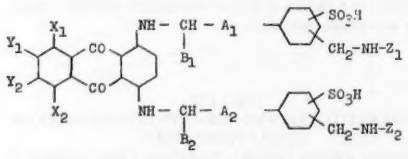
Filed Jan. 29, 1973, Ser. No. 327,527

Claims priority, application Switzerland, Feb. 4, 1972, 1691/72

Int. Cl. C09b *1/40, 1/52*

U.S. Cl. 260—372 **8 Claims**

1. Fibre-reactive anthraquinone compounds of the formula



(1),

wherein X_1 and X_2 each represents a hydrogen atom or a hydroxy group and Y_1 and Y_2 each represents a hydrogen atom or a halogen atom, A_1 and A_2 each represents an alkylene radical with 1 to 4 carbon atoms or a direct bond, B_1 and B_2 each represents an alkyl radical with 1 to 5 carbon atoms, the total number of carbon atoms in A_1 and B_1 and A_2 and B_2 being not greater than 5, and Z_1 and Z_2 each represents chloroacetyl, bromoacetyl, chloropropionyl, bromopropionyl, α,B-dichloropropionyl, α,B-dibromopropionyl, α-chloroacryloyl or α-bromoacryloyl, and wherein both phenyl radicals can contain further substituents selected from the group consisting of chlorine, bromine, lower alkyl or lower alkoxy.

3,862,193

O-(NITROARYL) OXIMES OF 3-KETO STEROIDS

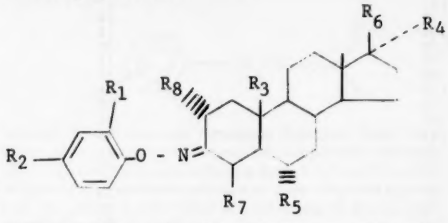
Allen F. Hirsch, Somerville, N.J., assignor to Ortho Pharmaceutical Corporation, New Brunswick, N.J.

Continuation-in-part of Ser. No. 94,530, Dec. 2, 1970, , which is a continuation-in-part of Ser. No. 882,286, Dec. 4, 1969, Pat. No. 3,686,237. This application June 2, 1972, Ser. No. 259,092The portion of the term of this patent subsequent to Nov. 6, 1990, has been disclaimed.

Int. Cl. C07c *167/00, 169/00*

U.S. Cl. 260—397.3 **11 Claims**

1. Compounds of the formula:



where R_1 and R_2 are H or NO_2, and at least one of R_1 and R_2 is NO_2;

R_3 is H or CH_3

R_4 is H or CH_3 or CH_2-CH_3 or ethinyl;

R_5 is H or CH_3

R_6 is hydroxy, alkyl esters having 2–7 carbon atoms, keto or acetyl;

R_7 is hydrogen or halogen and R_8 is hydrogen or halogen.

3,862,194

ALKYLATED 3,20-DIKETOΔ^4-STEROIDS OF THE PREGNANE SERIES

Gilbert Frederick Woods, Glasgow; James Cairns, Cumbernauld, and George McGarry, Airdrie, all of Scotland, assignors to Akzona Incorporated, Asheville, N.C.

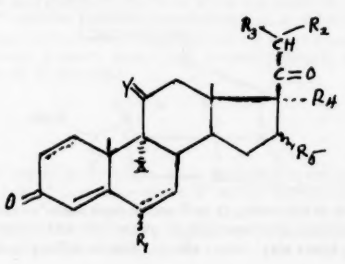
Filed Jan. 3, 1973, Ser. No. 320,777

Claims priority, application Great Britain, Jan. 12, 1972, 1534/72

Int. Cl. C07c *169/34*

U.S. Cl. 260—397.3 **4 Claims**

1. An alkylated 3,20-diketo-Δ^4-steroid of the pregnane series having the formula:



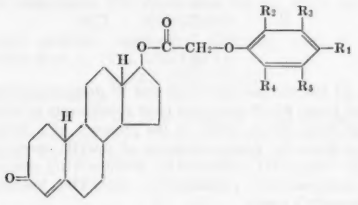
wherein
X = a member of the group consisting of H and halogen;
Y = a member of the group consisting of H, H(OH),H(OAcyl), O and halogen;
R_1 = a member of the group consisting of H, CH_3 and halogen;
R_2 and R_3 = alkyl having 1–4 carbon atoms;
R_4 = a member of the group consisting of H (except when Y = H), OH, OAcyl, OAlkyl and CH_3;
R_5 = a member of the group consisting of H and alkyl having 1–4 carbon atoms;
and in which at least one of the substituents R_4 and R_5 is alkyl, and C_1–C_2 and C_6–C_7 are selected from a saturated and an unsaturated bond.

3,862,195
STEROID DERIVATIVES AND THE PREPARATION THEREOF

Jean Marie Gastaud, Monaco, England, assignor to Societe Anonyme Francaise Theramex, Paris, France

Filed June 15, 1971, Ser. No. 153,399
Claims priority, application Great Britain, June 17, 1970, 29441/70
Int. Cl. C07c *169/32*
U.S. Cl. 260—397.4 **18 Claims**

1. Compounds of the general formula:



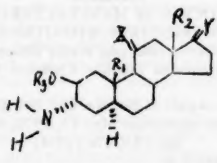
R_1 is selected from the group consisting of cyclopentyl and cyclohexyl, R^2, R^3, R^4 and R^5 are the same or are different and are selected from the group consisting of a hydrogen atom, a chlorine atom and a methyl atom.

3,862,196
NOVEL 2β-HYDROXY-3α-AMINO-STEROIDS AND DERIVATIVES THEREOF AND THE PROCESSES FOR THEIR PREPARATION

Colin Leslie Hewett, Bearsden, and David Samuel Savage, Newton Mearns, both of Scotland, assignors to Akzona Incorporated, Asheville, N.C.

Filed July 10, 1973, Ser. No. 377,977
Claims priority, application Great Britain, July 14, 1972, 33112/72
Int. Cl. C07c *169/20, 169/32*
U.S. Cl. 260—397.4 **3 Claims**

1. A 2β-hydroxy-3α-amino-steroid of the group consisting of the oestrane, androstane and pregnane series, of the formula:



in which R_1 is selected from the group consisting of hydrogen and methyl;
R_2 is methyl;
R_3 is selected from the group consisting of hydrogen and acyl derived from an aliphatic, cycloaliphatic, aromatic or araliphatic carboxylic having 1–18 carbon atoms;
X is selected from the group consisting of H_2, $H(OR_3)$ and O;
Y is selected from the group consisting of O, $H(\beta OR_3)$, $H(\beta COCH_3)$ and $H(\beta CHOR_3CH_3)$;
and the pharmaceutically acceptable acid addition salts and N-mono-acyl derivatives thereof.

3,862,197
COCOA BUTTER COMPOSITION AND METHOD OF MAKING THE SAME

Charles S. Castner, Reading, Pa., assignor to Schuyler Development Corporation, Reading, Pa.

Filed May 9, 1973, Ser. No. 358,653
Int. Cl. C11c *1/04*
U.S. Cl. 260—418 **6 Claims**

1. The method of recovering cocoa butter fatty acids comprising the steps of:
a. admixing cocoa butter in water at elevated temperature with an alkali metal hydroxide to provide a pH of 10.5 to 11.5;
b. agitating the mixture until partial saponification of the cocoa butter at the desired pH level has been complete;
c. adding hydrochloric acid to the partially hydrolyzed cocoa butter with constant agitation to a maintained pH of between 4.5 and 6.0;
d. washing the unreacted cocoa butter and cocoa butter reaction product to remove insoluble and soluble salts; and
e. collecting the washed partially hydrolyzed cocoa butter product.

3,862,198
CATALYZED REDISTRIBUTION OF ALKYLTIN HALIDES

Thomas G. Kugele, and Duane H. Parker, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Chemicals, Inc., Reading, Ohio

Filed Jan. 10, 1974, Ser. No. 432,396
Int. Cl. C07j *7/22*
U.S. Cl. 260—429.7 **13 Claims**

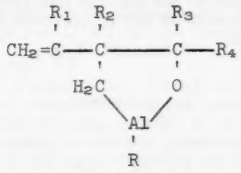
1. In a process of reacting a tin compound of the group consisting of (1) R_4Sn, (2) R_3SnX and (3) R_2SnX_2 with SnX_4 to form $RSnX_3$ where R is hydrocarbyl and X is a halogen of atomic weight 19 to 127, the improvement comprising carrying out the reaction in the presence of an onium salt catalyst of the formula R'_4ZY where R' is alkyl, aryl or aralkyl, Z is N,P or As and Y is an anion.

3,862,199
ORGANOALUMINUM COMPOUNDS AND THEIR PREPARATION

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 15, 1973, Ser. No. 416,063
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A **35 Claims**

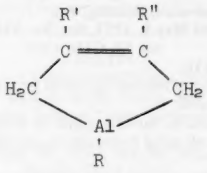
12. An organoaluminum compound of the formula



wherein R is a hydrocarbon group having up to about 18 carbon atoms, R_1 is hydrogen or an alkyl or an alkenyl group, R_2 is hydrogen or an alkyl group, R_3 is hydrogen or an innocuous carbon-bonded organic group having up to about 30 carbon atoms, and R_4 is hydrogen or an innocuous carbon-bonded organic group having up to about 30 carbon atoms,

each said carbon-bonded organic group being innocuous in the sense that it did not prevent the formation of said moiety nor interfere with the existence of said moiety once it was formed.

32. A process of preparing an organoaluminum compound possessing a 4-vinylic-(1-alumina-2-oxacyclopentane) moiety which comprises reacting in a stable Lewis base reaction medium (i) an aldehyde or a ketone and (ii) an organoaluminum compound coreactive therewith to cause 1:1 addition therebetween, said organoaluminum compound having the formula



wherein R is a hydrocarbon group having up to about 18 carbon atoms, R′ is a hydrogen, lower alkyl or lower alkenyl group, and R″ is a hydrogen or lower alkyl group.

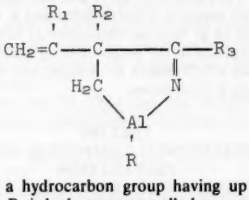
3,862,200

ORGANOALUMINUM COMPOUNDS AND THEIR PREPARATION

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 2, 1973, Ser. No. 412,179
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A **23 Claims**

9. An organoaluminum compound of the formula



wherein R is a hydrocarbon group having up to about 18 carbon atoms, R_1 is hydrogen or an alkyl or an alkenyl group, R_2 is hydrogen or an alkyl group, and R_3 is a carbon-bonded group having up to about 30 carbon atoms.

21. A process of preparing an organoaluminum compound possessing a 4-vinylic-(1-alumina-2-azacyclopent-2-ene) moiety which comprises reacting in an ether reaction medium a hydrocarbyl mononitrile and an organoaluminum compound of the formula

wherein R is a hydrocarbon group having up to about 18 carbon atoms, R′ is a hydrogen, lower alkyl or lower alkenyl group, and R″ is a hydrogen or lower alkyl group.

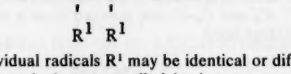
3,862,201

PRODUCTION OF 1-ALKENYL ISOCYANATES

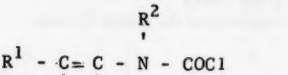
Karl-Heinz Koenig, 8a Pierstrasse, 6710 Frankenthal, and Hans Kiefer, 5 Im Sandgarten, 6706 Wachenheim, both of Germany

Filed Apr. 30, 1970, Ser. No. 33,489
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 P **2 Claims**

1. A process for the production of 1-alkenyl isocyanates having the formula (I)



where the individual radicals R^1 may be identical or different and each denotes hydrogen or alkyl having one to twenty carbon atoms, cycloalkyl having five to twenty carbon atoms, aralkyl having seven to twelve carbon atoms or aryl having not more than twelve carbon atoms, or two radicals R^1 which are not hydrogen denote members of a five-membered to twelve-membered carbocyclic ring, while the third radical R^1 has the said meanings which comprises the thermal cleavage of an N-(1-alkenyl)-N-t-alkylcarbamoyl chloride having the formula II



where R^1 has the said meanings and R^2 denotes a t-butyl or t-pentyl group which may bear inert substituents at temperatures of from 20° to 300°C in the presence of a metal salt selected from the group consisting of zinc(II), mercury(II), lead(II), copper(II), cadmium(II), antimony(III), chromium(III), manganese(II), palladium(II), nickel(II), bismuth(III) and bismuth(V) salts.

3,862,202

TEREPHTHALONITRILE PROCESS

Richard V. Norton, Wilmington, Del., and Ronald D. Bushick, Glen Mills, Pa., assignors to Sun Research and Development Co., Marcus Hook, Pa.

Filed July 16, 1973, Ser. No. 379,908
Int. Cl. C07c *121/02*
U.S. Cl. 260—465 C **4 Claims**

1. In the process of separating terephthalonitrile from a gaseous ammoxidation product stream, said terephthalonitrile being obtained by ammoxidation of p-xylene and containing p-toluonitrile as an impurity in an amount of from about 10 to 50 mole percent based on the total nitrile products, the improvement which comprises cooling said hot product stream without use of a quenching liquid to a temperature above 150°C and below 165°C and separating solid crystals of terephthalonitrile.

3,862,203

PROCESS OF MANUFACTURING NITRILOTRIACETONITRILE

Carl C. Greco, Garnerville, and Walter Stamm, Carmel, both of N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 691,244, Dec. 18, 1967, abandoned. This application May 11, 1970, Ser. No. 36,390
Int. Cl. C07c *121/42*
U.S. Cl. 260—465.5 A **11 Claims**

1. A single phase process for manufacturing nitrilotriacetonitrile comprising:

a. reacting under aqueous acid condition ammonia with formaldehyde and hydrogen cyanide provided in at least the stoichiometric portions required to react the ammonia to methylene diaminotetraacetonitrile at a pH be-

tween about 3 and 0.5 and a temperature between about 50° C. to 100° C. for a sufficient time to form a reaction mixture containing methylene diaminotetraacetonitrile;

b. reacting methylene diaminotetraacetonitrile in the reaction mixture containing methylene diaminotetraacetonitrile under aqueous acid conditions at a temperature between about 100° C. and about 150° C. and under at least autogenous pressure with formaldehyde and hydrogen cyanide said formaldehyde and hydrogen cyanide provided in portions at least stoichiometrically sufficient to react the methylene diaminotetraacetonitrile to nitrilotriacetonitrile, to form nitrilotriacetonitrile.

3,862,204

HYDROXYCARBOXYLIC ACID NITRILES AND PROCESS

Wilfried Umbach, Langenfeld; Rainer Mehren, Wesel-Lackhausen, and Werner Stein, Erkrath-Unterbach, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

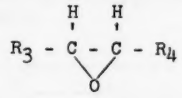
Continuation of Ser. No. 175,773, Aug. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 24,031, March 30, 1970, abandoned. This application Oct. 15, 1973, Ser. No. 406,233

Claims priority, application Germany, Apr. 5, 1969, 1917658; Sept. 5, 1970, 2044160

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.6 **13 Claims**

1. A process for the production of 3-hydroxy-carboxylic acid nitriles having more than 5 carbon atoms which consists essentially of reacting an organic vicinal epoxide having the formula



wherein R_3 represents a member selected from the group consisting of alkyl, vicinal-epoxy-alkyl, alkyl-carbalkoxy, alkoxyalkyl and hydroxyalkyl, and R_4 represents a member selected from the group consisting of hydrogen and R_3, and R_3 and R_4 together represent alkylene, the sum of the carbon atoms in R_3 and R_4 being from 6 to 22 with hydrocyanic acid the ratio of said organic vicinal epoxide and said hydrocyanic acid is between 1:*x* and 1:1.2*x* wherein *x* represents the number of epoxy groups present in said organic vicinal epoxide, at a temperature between −20° and 120°C under sufficient pressure to maintain the reactants in the liquid phase, in the presence of from 0.1 to 20 percent by weight based on said organic vicinal epoxide, of catalytic compounds selected from the group consisting of compounds forming cyanide ions under the reaction conditions, alkali metal hydroxides, alkaline earth metal hydroxides, thallous hydroxide, alkali metal alkanolates having 1 to 22 carbon atoms, alkali metal alkanediolates having 2 to 6 carbon atoms, alkali metal alkoxyalkanolates having 3 to 22 carbon atoms, alkali metal alkanetriolates having 3 to 6 carbon atoms, alkali metal partial alkylethers of alkanetriolates having 4 to 22 carbon atoms, alkali metal polyoxyethylene glycolates having 4 to 12 carbon atoms, alkali metal monolower alkyl ethers of polyoxyethylene glycolates, alkali metal phenyl-lower-alkanolates, alkali metal cyclohexanolates, alkali metal enolates of alkanones having 4 to 22 carbon atoms, alkali metal enolates of lower alkyl lower alkanoates, alkali metal phenolate, alkali metal alkylphenolates having from 7 to 22 carbon atoms and alkali metal naphtholates, and mixtures thereof, said reaction occuring under conditions selected from the group consisting of (a) in the presence of a polar organic solvent and (b) in a solvent-free system, and recovering said 3-hydroxy-carboxylic acid nitrile.

3,862,205

OXIDATION OF DIAMINOMALEONITRILE TO DIIMINOSUCCINONITRILE

Owen Wright Webster, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 23, 1973, Ser. No. 408,583

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.5 R **7 Claims**

1. Method of preparing diiminosuccinonitrile which comprises reacting diaminomaleonitrile with an inorganic oxidizing agent selected from the group consisting of MnO_2, NaOCl, PbO_2, Ag_2O, HgO, $K_3Fe(CN)_6$, NiO_2, Br_2 and Cl_2 in a molar ratio of diaminomaleonitrile to oxidizing agent of from **1:100** to **100:1** at a pH of at least **7** and a temperature of **−40°** to 100°C.

3,862,206

DIESTERS OF TRICYCLIC ALCOHOLS

Yoshiaki Inamoto; Hirokazu Nakayama; Hidetsugu Takenaka, and Takeji Kadono, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

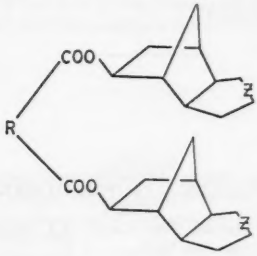
Filed Aug. 20, 1971, Ser. No. 173,666

Claims priority, application Japan, Aug. 28, 1970, 45-75410

Int. Cl. C07c *64/74*

U.S. Cl. 260—468 G **6 Claims**

1. A compound of the formula



in which R is selected from the group consisting of cyclopentylene, cyclohexylene, cyclohex-1-en-1, 2-ylene, thermally polymerized dimer acid of the formula $—C_{34}H_{64}—$,bicyclo hept -2, 3-ylene, 1, 3-adamantylene, 1,3-bis (methyl) adamantylene and bicyclo hept-2-en-5,6-ylene and Z represents a single or double bond.

3,862,207

PROCESS FOR PREPARING HIGH-POROSITY CATALYSTS FOR THE DEHYDROGENATION

Georgeta Csomontanyi, Str. Nordului 4, Ploiesti; Vladimir Mocearov, Str. C.A. Rossetti, 34, Bucharest; Alexandru Panovici, Str. Cameliei, 17 bis, Ploiesti, and Viorel Biceaga, Str. Libertatii No. 6, Or. Gh. Gheorghio-Dej, all of Romania

Filed Nov. 1, 1971, Ser. No. 194,615

Int. Cl. B01j *11/22*

U.S. Cl. 252—470 **3 Claims**

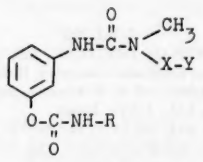
1. A method of making a catalyst for the dehydrogenation of hydrocarbons, comprising the steps of forming an extrudable catalyst paste consisting essentially of iron oxide, chromium oxide and potassium carbonate powders and waters, the iron oxide and the chromium oxide being in a weight ratio of 15:1 to 40:1, and the iron oxide and potassium carbonate being in a weight ratio of 0.25:1 to 3.5:1; mixing polystyrene beads with a particle size of 0.1 to 0.3 mm in an amount of 5 percent to 30 percent by weight of the final catalyst composition prior to calcination with said paste and extruding said paste to form catalyst bodies; and calcining said bodies to thermally decompose the polystyrene therein.

3,862,208
SUBSTITUTED N-(3-AMINOCARBONYLOXYPHENYL)-N-METHYLUREAS

Bernd Zeeh; Klaus Wulz, both of Ludwigshafen, and Adolf Fischer, Mutterstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed May 19, 1972, Ser. No. 254,879
Claims priority, application Germany, June 16, 1971, 2129773
Int. Cl. C07c *127/18*
U.S. Cl. 260—471 A 13 Claims

1. A substituted urea of the formula



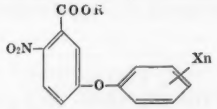
where R denotes alkyl of 1 to 5 carbon atoms,
and in the combinations of X and Y which denote one of the groups $-OOCNHR'$, $-COOR'$, $-CH_2COOR'$, $-CH_2CH_2COOR'$ or $-OCH_2COOR'$, R' denotes alkyl of 1 to 5 carbon atoms.

3,862,209
PROCESS OF MAKING NITRO PHENOXYBENZOIC ACID ESTERS

Robert James Theissen, Union County, N.J., assignor to Mobil Oil Corporation, New York

Filed May 12, 1972, Ser. No. 252,780
Int. Cl. C07c *101/54*
U.S. Cl. 260—471 R 9 Claims

1. In a process for synthesizing phenoxybenzoic acid esters having the following general structure:



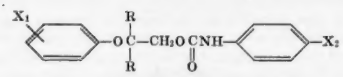
wherein R is alkyl (C_1–C_5), X is selected from the group consisting of hydrogen, iodine, fluorine, chlorine, bromine and combinations thereof, and *n* is an integer of from 2 to 5, the improvement which comprises (1) esterifying a halobenzoyl halide with isopropyl alcohol at a temperature from about 25° C to about 85° C to produce a halobenzoate ester, (2) nitrating the halobenzoate ester at a temperature of from about −50° to about +45° C with nitric acid in a mole ratio of nitric acid to ester substrate of between about 5:1 to about 20:1; (3) reacting the resulting isopropyl nitrobenzoate thereby produced with an alkali metal phenolate at a temperature of from about 70° to about 200° C to obtain an isopropyl halophenoxynitrobenzoate ester; (4) and, when the desired halophenoxynitrobenzoic acid ester is other than the isopropyl ester, transesterifying said isopropyl ester with a molar excess of a lower (C_1–C_5) alkyl alcohol other than isopropanol in the presence of a catalyst selected from the group consisting of alkali metals and alkali metal alkoxides to obtain the desired phenoxybenzoic acid ester.

3,862,210
NOVEL DERIVATIVES OF BETA-PHENOXYETHANOLS

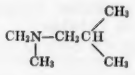
Masao Murayama; Eisuke Seto; Hiroshi Enomoto; Takashi Okubo; Yoshitsugu Nomiyana, and Katsuhide Saito, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd., Kyoto, Japan

Filed June 11, 1973, Ser. No. 368,476
Claims priority, application Japan, July 5, 1972, 47-67842
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 7 Claims

1. A β-phenoxyethanol compound of the formula:



wherein
R is H or CH_3,
X_1 is H, Cl, CH_3, t-butyl, OCH_3, CF_3, CHO, CH_2OH, CH_2O-$COCH_3$ or



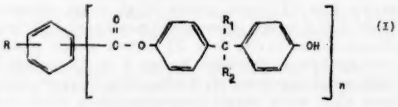
and
X_2 is H, Cl or Br.

3,862,211
ULTRAVIOLET LIGHT AND HEAT STABILIZERS

Reginoldus Havinga, Schalkhaar, and Pieter Dirk Swaters, Lochem, both of Netherlands, assignors to Koninklijke Industrieele Maatschappij, Noury & Van Der Lande N.V. Deventer, Netherlands

Filed Sept. 21, 1970, Ser. No. 74,127
Claims priority, application Netherlands, Oct. 2, 1969, 6914886
Int. Cl. C07c *69/78*
U.S. Cl. 260—476 R 6 Claims

1. A compound having the general formula:



wherein R_1 and R_2 are lower alkyl groups or together form a cycloalkyl group, *n* being 1 or 2; and, when $n = 1$, R is hydrogen, an alkyl group having from 1–6 carbon atoms, or a halogen atom and, when $n = 2$, R is hydrogen.

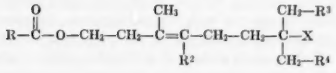
3,862,212

ORGANIC HALIDES AND THE METHOD OF PRODUCING THE SAME

Hiroyuki Nomori, No. 297-3 Ouchi; Takuo Kawaguchi, No. 1625, Sakazu, both of Kurashiki, Japan; Kozo Nakao, No. 705 Niwase Kibi-cho, Tsukulo-gun, Okayama Prefecture, Japan; Masahisa Tanomura, No. 1625, Sakazu; Takashi Nishida, No. 1625, Sakazu; Toshiaki Takagi, 2047-1, Sakazu, and Kazuo Itoi, 1652-3, Sakazu, all of Kurashiki, Japan

Filed Nov. 1, 1971, Ser. No. 194,565
Claims priority, application Japan, Nov. 7, 1971, 46-98170; Jan. 7, 1970, 45-98171
Int. Cl. C07c *69/14, 69/24, 69/78*
U.S. Cl. 260—476 R 11 Claims

1. An organic halide having the formula:



wherein X is halogen and R^2, R^3 and R^4 are selected from the group consisting of a hydrogen atom, an alkyl or alkenyl group having from one to six carbon atoms and a halogenated alkyl or alkenyl group having from one to six carbon atoms, and wherein R is selected from the group consisting of an alkyl radical having from one to six carbon atoms, a phenyl radical and a benzyl radical.

3,862,213

Patent Not Issued For This Number

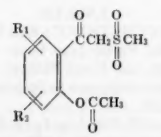
3,862,214

2-HYDROXY-2-(METHYLSULFONYL)-ACETOPHENONE ACETATES AND RELATED COMPOUNDS

Marvin P. Cohen, New Milford, and Max Von Strandtmann, Rockaway, both of N.Y., assignors to Warner-Lambert Company, Morris Plaines, N.J.

Filed May 14, 1973, Ser. No. 359,823
Int. Cl. C07c *147/10, 147/06*
U.S. Cl. 260—479 R 17 Claims

1. A compound of the formula:



1

wherein R_1 and R_2 are hydrogen, lower alkyl having one to six carbon atoms, lower alkoxy having one to six carbon atoms, hydrocarbon aryl having six to 10 carbon atoms or halogen or R_1 and R_2 taken together with the benzene ring forming naphthalene.

3,862,215

PRODUCTION OF 2,2-DIMETHYL-1,3-PROPANEDIOL MONOESTERS OF HYDROXYPIVALIC ACID

Franz Merger, 25 Max-Slevogt-Strasse, 6710 Frankenthal; Gerd Duembgen, 4 Sudetenstrasse, 6701 Dannstadt, and Werner Fuchs, 30b Muenchbuschweg, 6700 Ludwigshafen, all of Germany

Filed July 3, 1973, Ser. No. 376,130
Int. Cl. C07c *69/66*
U.S. Cl. 260—484 R 13 Claims

1. A process for the production of 2,2-dimethyl-1,3-propanediol hydroxypivalic monoester which comprises disproportionating hydroxypivalaldehyde at a temperature of from 10°–170° C in the presence of a catalytic amount of a catalyst selected from the group consisting of (A) calcium hydroxide, barium hydroxide or strontium hydroxide, (B) at least one oxide of a metal selected from the group consisting of lithium, magnesium, thallium, lead, bismuth, lanthanum, cerium, zinc, cadmium, manganese, iron, cobalt, nickel, calcium, barium and strontium; (C) one of said oxides (B) in admixture with at least one of said hydroxides (A); (D) at least one hydroxide of a metal selected from the group consisting of lithium, magnesium, thallium, lead, bismuth, lanthanum, cerium, zinc, cadmium, manganese, iron, cobalt, and nickel; (E) at least one of said hydroxides (D) in admixture with at least one of said hydroxides (A); and (F) at least one of said hydroxides (D) in admixture with at least one oxide of a metal selected from the group consisting of calcium, strontium and barium, and water being present in the reaction mixture from 3 to 100% by weight based on hydroxypivalaldehyde at least when said catalyst is said hydroxide (A).

3,862,216

PROCESS FOR PREPARING VINYL ACETATE

Benedetto Calcagno, Milan; Claudio Divo, Saronno, and Marcello Ghirga, Bresso, all of Italy, assignors to Societa italiana S.p.A., Milan, Italy

Filed July 15, 1969, Ser. No. 842,029
Claims priority, application Italy, July 22, 1968, 19273/68
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 A 14 Claims

1. In a process for preparing vinyl acetate which comprises:

a. supplying ethylene and gaseous oxygen or an oxygen-containing gas to a reactor containing a solution or suspension of a catalyst of palladium and copper and an acetate or halide of a member selected from the group consisting of an alkali and alkaline earth metal,

b. separating the condensible products of the reaction including vinyl acetate, and

c. recycling the remaining gaseous products including any unreacted ethylene,

the improvement which comprises;

1. drawing a fraction of the recycled gases from the production reactor for vinyl acetate, said fraction constituting less than 10 percent by volume of the gases to be recycled,
2. Oxidizing the ethylene contained in said fraction to acetic acid through the employment of oxygen or oxygen-containing gases in the presence of a supported oxidation catalyst selected from the group VIII of the Periodic Table, the oxygen/ethylene ratio, by volume, ranging from 20:1 to 2.5:1 and the total oxygen and ethylene content not exceeding 20 percent by volume, the balance being inert gases, and
3. feeding said acetic acid to the vinyl acetate production reactor in order that the side product content in the recycled gases remains below 20 percent by volume,

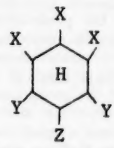
the amount of acetic acid necessary for vinyl acetate production being simultaneously formed.

3,862,217
CYCLOHEXANE HEXACARBOXYLIC ACID

Heinz Nohe, Meckenheim, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/-Rhine, Germany

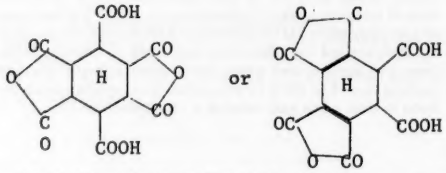
Filed Mar. 12, 1973, Ser. No. 339,632
Int. Cl. C07c *61/08*
U.S. Cl. 260—514 K 1 Claim

1. Cyclohexane-1,2,3,4,5,6-hexacarboxylic acid of the formula (I):



(I)

in which X is a carboxyl group in equatorial position,
Y is a carboxyl group in axial position and
Z is a carboxyl group in axial or equatorial position, said acid being obtained by dehydrating an all cis cyclohexane hexacarboxylic acid at a temperature of from 80° to 300°C to form the dianhydride of the formula



and hydrolyzing the dianhydride by heating it in water to a temperature of from 80° to 100°C.

3,862,218
PURIFICATION OF TEREPHTHALIC ACID BY THERMAL TREATMENT

Adin L. Stautzenberger, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 780,269, Nov. 29, 1968, abandoned, which is a continuation-in-part of Ser. No. 705,600, Feb. 15, 1968, abandoned. This application Sept. 7, 1971, Ser. No. 178,512
Int. Cl. C07c *63/26*, *51/42*
U.S. Cl. 260—525 18 Claims

1. A method for improving the purity of a crude terephthalic acid produced by the liquid-phase oxidation of p-xylene with an oxygen-containing gas and containing impurities comprising 4-carboxybenzaldehyde, which method comprises:
a. heating a mixture consisting essentially of said crude terephthalic acid and an inert liquid medium non-catalytically to a temperature of at least 325°C, said temperature being one at which no more than about 50 percent of the terephthalic acid remains as a solid, the pressure being sufficient to maintain a liquid phase at temperatures below the critical temperature,
b. cooling the terephthalic acid and liquid medium so as to crystallize terephthalic acid and
c. recovering the thus crystallized, purified terephthalic acid having a 4-carboxybenzaldehyde content lower than that of said crude terephthalic acid.

16. A method for improving the purity of a crude terephthalic acid produced by the liquid-phase oxidation of p-xylene with an oxygen-containing gas and containing impurities comprising 4-carboxybenzaldehyde, which method comprises:
a. heating crude terephthalic acid, an inert liquid medium, and a catalyst consisting essentially of an alkali metal salt of a carboxylic acid or an inorganic acid to a temperature of at least 325°C, said temperature being one at which no more than about 50 percent of the terephthalic acid remains as a solid, the pressure being sufficient to maintain a liquid phase at temperatures below the critical temperature,
b. cooling the terephthalic acid and liquid medium so as to crystallize terephthalic acid and
c. recovering the thus crystallized, purified terephthalic acid.

3,862,219
PROCESS FOR THE PREPARATION OF ALKALI-METAL SALTS OF CARBOXYALKOXY SUCCINATES

Kenneth L. Lindsay, and Paul Kobetz, both of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Oct. 20, 1971, Ser. No. 191,124
Int. Cl. C07c *59/22*
U.S. Cl. 260—535 P 10 Claims

1. A process for producing a high purtiy alkali metal carboxyalkoxy succinate from a zinc or alkaline earth metal carboxyalkoxy succinate contaminated with zinc or alkaline earth metal salt of at least one of maleic acid, fumaric acid and hydroxy organic acid which comprises,
selectively reacting the zinc or alkaline earth metal carboxyalkoxy succinate with a stoichiometric deficiency ratio of alkali metal carbonate for complete reaction of all zinc or alkaline earth metal salt present to form a solution of alkali metal carboxyalkoxy succinate containing a carbonate of the zinc or alkaline earth metal, and
recovering the soluble alkali metal carboxyalkoxy succinate solution from the zinc or alkaline earth metal salt residue of maleic acid, fumaric acid or hydroxy organic acid remaining after the selective reaction of the carboxyalkoxy succinate.

3,862,220
METHOD OF PREPARING HALOGENATED OLEFINIC DERIVATIVES OF SATURATED GAMMA-KETO MONOARBOXY ACIDS AND RELATED COMPOUNDS

William A. Erby, Alburtis, and Robert A. Walde, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 714,761, March 21, 1968, abandoned, which is a division of Ser. No. 541,096, April 8, 1966, Pat. No. 3,577,546. This application Aug. 30, 1972, Ser. No. 284,815
Int. Cl. C07c *65/00*
U.S. Cl. 260—539 R 7 Claims

1. A method for producing C_4–C_{10} polyhalogenated gamma-keto monocarboxy alkenoic acids having at least four halogen atoms per molecule which comprises the direct combined halogenation and dehydrogenation of C_4–C_{10} gamma-keto-monocarboxy alkanoic acids by treatment with elemental halogen initially at substantially ambient temperature and gradually raising the temperature to a final temperature of between 170° C. and 270° C., the reaction being conducted at a rate sufficient to prevent product degradation and undue by-product formation, said halogen being selected from the group consisting of chlorine, bromine and mixtures thereof.

3,862,221
N,N′-DI(HYDROXYMETHYLCARBAMYL)CYSTAMINE

Gregoire Kalopissis, Paris; Jean-Louis Abegg, Le Perreux; Guiliana Ghilardi, and Henri Philippe de Beaulieu, both of Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Division of Ser. No. 749,278, Aug. 1, 1968, Pat. No. 3,694,141. This application Aug. 28, 1972, Ser. No. 284,076
Claims priority, application Luxembourg, Aug. 2, 1967, 54233
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 R 1 Claim

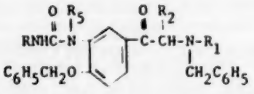
1. N,N′-di(hydroxymethylcarbamyl) cystamine.

3,862,222
α-AMINO-4-BENZYLOXY-3-UREIDOACETOPHENONES

Carl Kaiser, Haddon Heights, N.J., and Stephen T. Ross, Berwyn, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

Division of Ser. No. 105,698, Jan. 11, 1971, Pat. No. 3,763,232, which is a continuation-in-part of Ser. No. 12,151, Feb. 17, 1970, abandoned. This application May 29, 1973, Ser. No. 364,590
Int. Cl. C07c *127/18*
U.S. Cl. 260—553 A 2 Claims

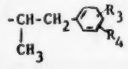
1. A chemical compound of the formula:



wherein:

R is hydrogen, straight or branched chain lower alkyl of from 1 to 5 carbon atoms, phenyl, dimethylaminoethyl or dimethylaminopropyl;

R_1 is branched chain lower alkyl of from 3 to 5 carbon atoms, cycloalkyl or cycloalkylmethyl, the cycloalkyl moiety having from 3 to 6 carbon atoms, or



R_2 is hydrogen, methyl or ethyl;

R_3 and R_4 are hydrogen, hydroxy or methoxy; and

R_5 is hydrogen or methyl.

3,862,223
PROCESS FOR PREPARING TRIURET

Alvin F. Beale, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 2, 1973, Ser. No. 347,237
Int. Cl. C07c *127/24*
U.S. Cl. 260—553 B 11 Claims

1. A process for preparing triuret which comprises providing a reaction mixture of urea, a biuret feedstock and an inert carrier liquid and heating the reaction mixture at a temperature of from about 112° to about 140°C. for a period of time sufficient to effect a substantial conversion of the reaction components to triuret, while maintaining the relationship of the urea concentration and the reaction temperature of the reaction mixture within the boundaries of ABC of the drawing.

3,862,224
PRODUCTION OF TEXTILE FINISHES

Harro Petersen, 23 Kalmitstrasse, 6710 Frankenthal; Heinz Bille, 1b Eschkopstrasse, 6713 Limburgerhof, and Guenter Reuss, 59 Wredestrasse, 6700 Ludwigshafen, all of Germany

Filed Oct. 18, 1972, Ser. No. 298,481
Int. Cl. C07c *127/00*
U.S. Cl. 260—555 R 4 Claims

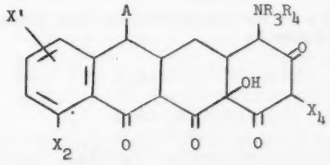
1. A process for the production of a textile finishing agent wherein ethylene glycol and formaldehyde are reacted for a period of from 1 to 4 hours in a molar ratio of from 1:1.5 to 1:2.5 at a temperature of from 80° to 100°C in the melt or an aqueous solution in the presence of an acid having a dissociation constant K or K_1 of at least 10^{-4} and sufficient to bring about a pH range in the reaction medium of from 0.4 to 1.5, and the resulting mixture is reacted at a temperature of from 30° to 50°C for a period of from 3 to 5 hours with an equal molar amount of from 0.3 to 0.4 mole, based on 1 mole of ethylene glycol, of each of glyoxal and urea at a pH of from 6 to 7 which is brought about by the addition of alkali or sodium carbonate so that from 5 to 15 percent of free formaldehyde is contained in the solution after the reaction.

3,862,225
D-RING SUBSTITUTED TETRACYCLINES

Lloyd H. Conover, Quaker Hill, Conn., and Robert B. Woodward, Belmont, Mass., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 647,238, June 19, 1967, abandoned, which is a continuation-in-part of Ser. No. 209,269, July 11, 1962, abandoned, which is a continuation-in-part of Ser. No. 132,304, Aug. 18, 1961, abandoned. This application Jan. 7, 1971, Ser. No. 104,747
Int. Cl. C07d *103/19*
U.S. Cl. 260—559 AT 6 Claims

1. A compound selected from the group consisting of those having the formula:



wherein

X′ is selected from the group consisting of 7-trifluoromethyl, 8-trifluoromethyl, 8-dimethylamino, 7-lower alkyl, 7-hydroxyl, 8-hydroxyl and 7-lower alkoxyl;

X_2 is OR′ wherein R′ is selected from the group consisting of hydrogen, lower alkyl and benzyl;

A is selected from the group consisting of hydrogen, lower alkyl, and B_2OCHB_3— wherein B_2 is lower alkyl, and B_3 is selected from the group consisting of hydrogen and lower alkyl;

R_3 and R_4 when taken together with the nitrogen atom to which they are attached form a nitrogen heterocyclic ring selected from the group consisting of piperazino, piperidino, morpholino, pyrrylo, thiomorpholino, pyrrolidono and 2-(lower carbalkoxy)pyrrolidino;

R_3 and R_4 when taken separately are each selected from the group consisting of hydrogen, lower alkyl and alkanoyl containing 1 to 4 carbon atoms, and β-dimethylaminoethyl,

with the proviso that only one of said R_3 and R_4 substituents is alkanoyl containing 1 to 4 carbon atoms and

X_4 is selected from the group consisting of cyano and —$CONHR_6$ in which R_6 is selected from the group consisting of hydrogen and lower alkyl.

3,862,226
BIS-[BETA-(4-N,N-DIACETYLAMINOPHENOXY)ETHYL]ETHER

Morton Harfenist, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Feb. 28, 1972, Ser. No. 230,126
Int. Cl. C07c *103/38*
U.S. Cl. 260—562 P **1 Claim**

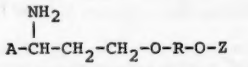
1. bis-[β-(4-N,N-diacetylaminophenoxy)ethyl] ether.

3,862,227
NEW DIAMINES

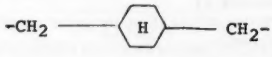
Theobald Haug, Frenkendorf, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 15, 1972, Ser. No. 263,020
Claims priority, application Switzerland, July 1, 1971, 9685/71
Int. Cl. C07c *93/04*
U.S. Cl. 260—563 R **6 Claims**

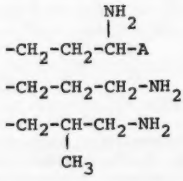
1. A diamine of the formula



wherein A is a lower alkyl group with one to six carbon atoms, R is a linear or branched alkylene group having two to 12 carbon atoms or the group



and Z is a member selected from the group consisting of a radical of formulae



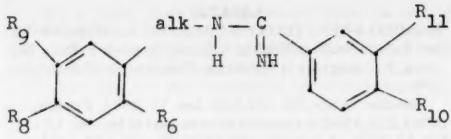
wherein A has the same meaning as above.

3,862,228
AMIDINES

Herman Robert Rodriguez, New York, N.Y., and George De Stevens, Summit, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 10,649, Feb. 11, 1970, abandoned, which is a continuation-in-part of Ser. Nos. 704,517, Feb. 12, 1968, Pat. No. 3,681,340, and Ser. No. 649,828, June 29, 1967, abandoned, said Ser. No. 704,517, and Ser. No. 649,828, each is a continuation-in-part of Ser. No. 630,520, April 13, 1967, abandoned. This application Feb. 18, 1972, Ser. No. 227,619
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R **6 Claims**

1. A compound of the formula



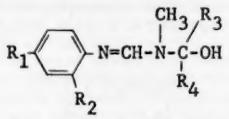
wherein alk is 1,2-ethylene, 1,2-propylene or 1,2-butylene, R_6 is hydrogen, methoxy, chloro, nitro or sulfamoyl, each of R_8 and R_9 is methoxy and each of R_{10} and R_{11} is hydrogen, methyl or chloro, or a salt thereof of a pharmaceutically acceptable acid.

3,862,229
FORMAMIDINE COMPOUNDS CONTAINING TRIHALOMETHYL GROUPS

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 11, 1974, Ser. No. 449,793
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 RF **13 Claims**

1. The compounds having the formula:



wherein R_1 and R_2 are independently methyl or halogen; R_3 is selected from the group of $-CF_3$, $-CF_2Cl$, $-CFCl_2$ and $-CCl_3$; and R_4 is selected from the group of $-H$, $-CF_3$, $-CF_2Cl$, $-CFCl_2$ and $-CCl_3$.

3,862,230
CONTINUOUS PREPARATION OF CYCLOHEXANONE OXIME

Abraham H. De Rooij, Geleen, and Jan Elmendorp, Brunssum, both of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Continuation of Ser. No. 73,906, Sept. 21, 1970, abandoned. This application Dec. 7, 1973, Ser. No. 422,712
Claims priority, application Netherlands, Sept. 20, 1969, 6914308
Int. Cl. C07c *131/04*
U.S. Cl. 260—566 A **1 Claim**

1. A process for the continuous preparation of cyclohexanone oxime which comprises:

a. reacting in the absence of an organic solvent cyclohexanone in an oxime synthesis zone with a counter-current of a buffered aqueous solution containing hydroxylamine having a pH of about 1.3 – 2.0 and comprising:

hydroxylammonium dihydrogen phosphate present in an amount at least equal to about 0.5 mole per kilogram of said solution,

ammonium nitrate, nitric acid or mixtures thereof present in an amount of at least about 0.7 moles per kilogram of said solution,

phosphoric acid and a compound selected from the class consisting of alkali salts of phosphoric acid, ammonium salts of phosphoric acid and mixtures thereof, the total concentration of phosphoric acid and said salt when dissolved is at least equal to about 1 mole per kilogram of said solution, and a member selected from the class consisting of alkali salts of sulphuric acid, ammonium salts of sulphuric acid and mixtures thereof; the contact time being the residence time of the respective fluids in the oxime synthesis zone as expressed by the general equation:

$$R = V/\Sigma f$$

wherein R is the residence time in the synthesis zone in minutes, V is the reaction volume, and Σf is the sum of the feeds

to the synthesis zone measured in parts by volume per unit of time, and R does not exceed 6;

b. separating the oxime from the reaction mixture; and

c. discharging from said oxime synthesis zone a solution virtually exhausted in hydroxylamine and containing not more than about 0.9 kg of unreacted cyclohexanone per kg. of oxime produced.

3,862,231

DIPHENYLPROPYL-SUBSTITUTED 1-AMINO ADAMANTANES

Ctirad Podesva, and Carola Solomon, both of Montreal, Quebec, Canada, assignors to Delmar Chemicals Limited, Ville Lasalle, Quebec, Canada

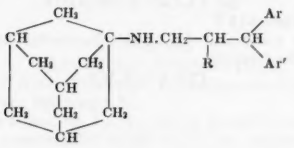
Continuation-in-part of Ser. No. 671,935, Oct. 2, 1967,. This application July 24, 1973, Ser. No. 382,106

Claims priority, application Great Britain, Oct. 18, 1966, 46575/66

Int. Cl. C07c *87/28*

U.S. Cl. 260—570 R **9 Claims**

1. A 1-aminoadamatane derivative of formula I



(I)

or a pharmaceutically acceptable acid addition salt thereof. wherein Ar and Ar′, which may be the same different, each represent an unsubstituted phenyl group or a mono-nitrosubstituted or mono-halo-substituted or mono-lower alkoxysubstituted or mono-lower alkyl-substituted phenyl group or mono-hydroxy-substituted phenyl group and R represents a hydrogen atom or aa lower alkyl group.

3,862,232

1-(P-HYDROXYPHENYL)-2-PHENYL-6-(2-DIETHYLAMINOETHOXY)-3,4-DIHYDRONAPHTHALENE AND THE SALTS THEREOF

Daniel Lednicer, Portage Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 292,767, July 3, 1963, abandoned. This application Dec. 16, 1968, Ser. No. 784,218

Int. Cl. C07c *93/06*

U.S. Cl. 260—570.7 **1 Claim**

1. A member of the group consisting of 1-(p-hydroxyphenyl)-2-phenyl-6-(2-diethylaminoethoxy)-3,4-dihydronaphthalene and the hydrochloride thereof.

3,862,233

AROMATIC AMINE ALKYLATION

James H. Dunn, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 24, 1969, Ser. No. 819,116

Int. Cl. C07c *87/28*

U.S. Cl. 260—578 **10 Claims**

1. A process for selectively alkylating the nucleus of an aromatic amine having at least one hydrogen atom bonded to a nuclear carbon atom ortho to an amino group and having at least one hydrogen atom bonded to said amino group, said process comprising heating said amine with an olefin in the presence of a gallium anilide catalyst at a temperature of from about 150° to 500°C.

3,862,234

AMINE RECOVERY

Charles Sam Steele, Nederland, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Filed June 12, 1973, Ser. No. 369,219

Int. Cl. C07c *85/04, 85/16*

U.S. Cl. 260—585 A **8 Claims**

1. In a method for preparation of ethylene amines by the reaction of ethylene dichloride with ammonia followed by neutralization with sodium hydroxide, the improvement for effecting recovery of amines from salt removed from the reaction mixture which comprises:

a. charging a salt contaminated with ethylene amines product to a crystallizer in the form of an aqueous solution;

b. removing water from said crystallizer in an overhead stream to form an aqueous slurry of salt crystals;

c. centrifuging the crystallized salt while washing with water to produce a filtrate and a salt cake;

d. recovering the filtrate stream containing ethylene amines; and

e. recovering the salt cake being substantially free of ethylene amines contamination.

3,862,235

PENT-4-EN-1-ALS AND THEIR PRODUCTION

Walter Himmele, Walldorf, and Werner Hoffmann, Luswigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Oct. 8, 1970, Ser. No. 79,301

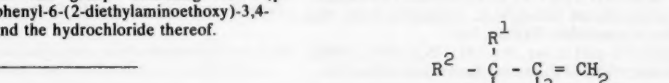
Int. Cl. C07c *47/38, 47/20*

U.S. Cl. 260—598 **3 Claims**

1. A process for the production of a pent-4-en-1-al of the formula:

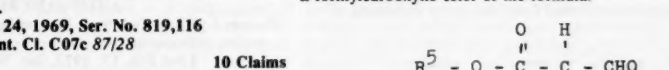
(I)

wherein R′ is hydrogen or methyl, R^2 is a straight chain hydrocarbon radical having up to 13 carbon atoms in the chain which is either saturated or may contain olefinic double bonds and may carry methyl, ethyl or methoxy groups as substituents, R^1 and R^2 together may be a pentamethylene group, R^3 is hydrogen and R^4 is an alkyl radical having 1 to 4 carbon atoms, which process comprises reacting an alcohol of the formula:



(II)

wherein R^1, R^2 and R^3 have the meanings given above, with an α-formylcarboxylic ester of the formula:



(III)

wherein R^4 has the above meaning and R^5 is an alkyl group having 1 to 4 carbon atoms, wherein from 1 to 5 moles of starting material (III) is used per mole of starting material (II) at a temperature of from 100° to 350°C.

3,862,236

PRODUCTION OF PROPIONALDEHYDE

Gerhard Scharff, Leverkusen; Manfred Martin, Cologne; Wolfgang Swodenk, Odenthal-Globusch; Wolfram Dornfeldt, Leichlingen, and Johann Grolig, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 6, 1970, Ser. No. 87,394

Claims priority, application Germany, Nov. 28, 1969, 1959776; Nov. 28, 1969, 1959780

Int. Cl. C07c *45/16*

U.S. Cl. 260—603 R 9 Claims

1. A process comprising passing allyl alcohol in the gas phase over a supported palladium and gold catalyst at a temperature of about 50° to 250°C whereby the allyl alcohol is converted to propionaldehyde, the palladium being present in about 0.1 to 10 g per liter of catalyst and for each 0.1 to 10 g of palladium there being present about 0.1 to 5 g of gold.

3,862,237

DIHYDROXY CARBORANES AND THE METHOD OF PREPARATION

Thomas A. Knowles, Cheshire, and Robert N. Scott, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed June 4, 1973, Ser. No. 366,346

Int. Cl. C07f *5/02*

U.S. Cl. 260—606.5 B 12 Claims

1. A carborane compound of the formula:

$HOCB_{10}H_9RCOH$

where $—CB_{10}H_9RC—$ represents the meta or para carborane radical and R is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms and alkenyl of 2 to 5 carbon atoms.

3,862,238

2-(2-BUTYNYLOXY)-PHENOL

Albrecht Mueller, 4 Pierstrasse, 6710 Frankenthal, Germany

Filed Dec. 4, 1970, Ser. No. 95,394

Claims priority, application Germany, Dec. 9, 1969, 1961623

Int. Cl. C07c *43/20*

U.S. Cl. 260—613 D 1 Claim

1. 2-(2-butynyloxy)-phenol.

3,862,239

ARYL SUBSTITUTED CYCLOHEXENECARBINOLS

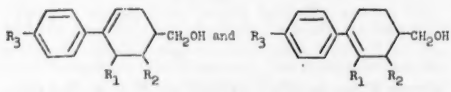
George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation-in-part of Ser. No. 747,075, July 24, 1968, abandoned, which is a continuation-in-part of Ser. No. 662,311, Aug. 22, 1967, abandoned. This application Oct. 27, 1971, Ser. No. 193,200

Int. Cl. C07c *43/20*

U.S. Cl. 260—613 R 5 Claims

1. A compound selected from the group consisting of



wherein R_1 is ethyl, R_2 is methyl, and R_3 is hydroxyl or methoxy.

3,862,240

ETHER COMPOUND AS INHALATION ANESTHETICS

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

Division of Ser. No. 174,248, Aug. 23, 1971, Pat. No. 3,746,769. This application Mar. 19, 1973, Ser. No. 342,900

Int. Cl. C07c *43/00*

U.S. Cl. 260—614 F 4 Claims

1. An aliphatic ether compound of the formula

$CHF_2 — CH_2 — O — CF_2 — CHX_2$

wherein each X is selected from the group consisting of F, Cl and mixtures thereof.

3,862,241

1,1,2,2,TETRAFLUOROETHYL FLUOROMETHYL ETHER

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

Division of Ser. No. 159,529, July 2, 1971, Pat. No. 3,769,434. This application Apr. 5, 1973, Ser. No. 348,409

Int. Cl. C07c *43/00, 43/14*

U.S. Cl. 260—614 F 1 Claim

1. The compound 1,1,2,2-tetrafluoroethyl fluoromethyl ether of the formula:

$CHF_2CF_2OCH_2F$.

3,862,242

METHOD FOR PURIFICATION

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,987

Int. Cl. C07c *41/12*

U.S. Cl. 260—616 7 Claims

1. A process for recovering pure 1,1,2-trifluoro-2-chloroethyl difluromethyl ether from a reaction product containing an azeotropic mixture of CHF_2OCF_2CHFCl and $CHCl_3$ comprising reacting the product containing the azeotropic mixture with an aqueous solution of a basic compound selected from the group consisting of alkali metal hydroxides and $Ca(OH)_2$ in the presence of a water soluble alcohol selected from the group consisting of lower alkanols of 1 to 6 carbon atoms and ethylene glycol, said basic compound being used in an amount of at least four moles basic compound per mole of $CHCl_3$, said alcohol being used in an amount in excess of about 0.1 parts by volume per volume of aqueous solution, refluxing the reaction mixture sufficiently to destroy the $CHCl_3$ and recovering essentially pure CHF_2OCF_2CHFCl from the reaction mixture by fractional distillation.

3,862,243

MIXED OXYALKYLATES EMPLOYED AS ANTIFOAMERS

Thomas J. Bellos, Kirkwood, Mo., assignor to Petrolite Corporation, Wilmington, Del.

Filed Feb. 17, 1972, Ser. No. 227,241

Int. Cl. C07c *43/04, 43/14*

U.S. Cl. 260—615 B 3 Claims

1. A composition of the formula

$R(OEt)_n(OBu)_mOH$

where R is an alkyl or alkenyl group having 6–22 carbons, OEt is oxyethylene, OBu is oxybutylene, *n* is from about 3 to 22 and *m* is from about 3 to 15.

3,862,244

PROCESS FOR THE PURIFICATION OF PHENOL

Robert Genod, and Michel Merand, both of Le Peage de Roussilon (Isere), France, assignors to Rhone-Poulenc S.A., Paris, France

Continuation of Ser. No. 269,870, July 7, 1972, , which is a continuation-in-part of Ser. No. 731,636, May 23, 1968, abandoned. This application Feb. 11, 1974, Ser. No. 441,319
Claims priority, application France, May 29, 1967, 67.108248
Int. Cl. C07c *37/22*
U.S. Cl. 260—621 A 7 Claims

1. Process for the purification of a phenol resulting from the splitting of isopropylbenzene hydroperoxide, which consists in contacting the phenol, after it has been brought to a pH of at least 7 by addition of a mineral or organic base selected from the group consisting of sodium hydroxide, potassium hydroxide, lithium hydroxide, barium hydroxide, calcium hydroxide, alkali metal carbonates, ammonia, alkylamines and cycloalkylamines containing up to 8 carbon atoms or a lower hydroxyalkylamine, at a temperature of 40°–250°C. with oxygen or with an oxygen containing gas, and then fractionally distilling the phenol.

3,862,245

RESORCINOL PREPARATION

Nicholas P. Greco, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 18,325, March 10, 1970, abandoned, which is a continuation-in-part of Ser. No. 682,915, Nov. 14, 1967, abandoned. This application June 8, 1972, Ser. No. 261,116
Int. Cl. C07c *37/10*
U.S. Cl. 260—621 M 3 Claims

1. A method of making resorcinol comprising:
a. dissolving m-dinitrobenzene in a mixed solvent consisting essentially of a mononuclear aromatic hydrocarbon selected from the group consisting of benzene, toluene and xylene and mixtures thereof and an alkanol having one to four carbon atoms,
1. said aromatic hydrocarbon being present in an amount sufficient to dissolve said m-dinitrobenzene,
2. said alcohol being present in an amount sufficient to dissolve the water of reaction and m-phenylenediamine that is subsequently to be produced from said m-dinitrobenzene and that will not be dissolved by said aromatic hydrocarbon, and
3. said aromatic hydrocarbon and said alcohol being selected and mixed in such proportions as to provide a mixed organic solvent having the physical characteristics of a constant boiling mixture,
b. contacting the resulting solution with hydrogen under positive pressure at an elevated temperature less than 100°C. in the presence of a nickel catalyst until hydrogen absorption ceases,
c. separating substantially pure m-phenylenediamine from the hydrogenated mixture by fractional distillation,
d. contacting said m-phenylenediamine with 1.2–2.2 moles of concentrated sulfuric acid per mole of said m-phenylenediamine in aqueous solution containing initially 5–15% by weight of m-phenylenediamine based upon the amount of water in said solution at a temperature of 180°–250°C. for a time sufficient to hydrolyze m-phenylenediamine to resorcinol to form an aqueous product solution,
e. cooling said aqueous product solution to prevent polymerization of the resorcinol that has been formed,
f. extracting resorcinol from said cooled aqueous product solution with a water immiscible solvent, and
g. recycling said remaining aqueous product solution back to the hydrolyzing step (d) for the production of more resorcinol.

3,862,246

HYDROLYSIS OF META-PHENYLENEDIAMINE

Nicholas P. Greco, Edgewood, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 16,545, March 4, 1970, abandoned. This application June 29, 1972, Ser. No. 267,525
Int. Cl. C07c *37/10*
U.S. Cl. 260—621 M 3 Claims

1. A method of making resorcinol comprising:
a. contacting m-phenylenediamine with ammonium bisulfate in an aqueous solution that contains 4 to 12 moles of ammonium bisulfate per mole of m-phenylenediamine and 40–120 moles of water per mole of m-phenylenediamine and that is at a temperature of 200°–300° C. for a period of ½ to 8 hours to hydrolyze said m-phenylenediamine to resorcinol,
b. cooling said hydrolysis reaction mixture, and
c. extracting said resorcinol from said solution with a water-immiscible organic solvent.

3,862,247

HYDROLYSIS OF PARA-AMINOPHENOL

Nicholas P. Greco, Edgewood, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 16,545, March 4, 1970, abandoned. This application June 29, 1972, Ser. No. 267,534
Int. Cl. C07c *37/10*
U.S. Cl. 260—621 M 3 Claims

1. A method of making hydroquinone comprising:
a. contacting p-aminophenol with ammonium bisulfate in an aqueous solution that contains between 1.2–6 moles of ammonium bisulfate per mole of p-aminophenol and contains 40–120 moles of water per mole of p-aminophenol and that is at a temperature of 200°–300° C. for a period of ½ to 8 hours to hydrolyze said p-aminophenol to hydroquinone,
b. cooling said hydrolysis reaction mixture, and
c. extracting said hydroquinone from said p-aminophenol with an inert water-immiscible organic solvent.

3,862,248

PURE 2,3,6-TRIMETHYLPHENOL

Donald C. Jones, and Martin B. Neuworth, both of Pittsburgh, Pa., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 2, 1968, Ser. No. 764,564
Int. Cl. C07c *37/44*
U.S. Cl. 260—621 B 3 Claims

1. A process for separating 2,3,6-trimethylphenol from a mixture of xylenols and trimethylphenols containing 2,3-xylenol and at least 40 percent by weight of 2,3,6-trimethylphenol which comprises passing isobutylene into said mixture at a temperature below 60° C. under butylating conditions, to thereby produce a butylation product containing 4-t-butyl-2,3,6-trimethylphenol and 4,6-di-t-butyl-2,3-xylenol, fractionally distilling said butylation product to recover a fraction containing principally said 4-t-butyl-2,3,6-trimethylphenol and said 4,6-di-t-butyl-2,3-xylenol, heating said fraction to a temperature between 60° and 125° C. under debutylating conditions to effect selective debutylation of said 4-t-butyl-2,3,6-trimethylphenol to 2,3,6-trimethylphenol and of said 4,6-di-butyl-2,3-xylenol to 6-t-butyl-2,3-xylenol, and fractionally distilling said debutylation product to recover 2,3,6-trimethylphenol.

3,862,249
METHOD OF MANUFACTURING ALCOHOLS

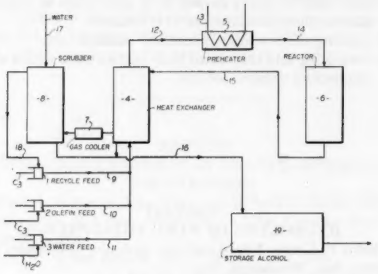
Wilhelm Ester, and Wilhelm Heitmann, both of Herne, Germany, assignors to Hibernia-Chemie GmbH, Gelsenkirchen-Buer, Germany

Continuation of Ser. No. 810,902, Feb. 20, 1969, abandoned, which is a continuation-in-part of Ser. No. 564,688, July 12, 1966, abandoned. This application Apr. 14, 1972, Ser. No. 244,231

Claims priority, application Germany, July 24, 1965, 37432

Int. Cl. C07c *29/04*

U.S. Cl. 260—641 7 Claims



1. In a process for the hydration of C_3 to C_6 mono-olefins to their corresponding alcohols at temperature and pressure operating conditions of about 140° to 250° C and about 10 to 100 atmospheres, the improvement which comprises carrying out said hydration in the presence of a catalyst comprising phosphoric acid impregnated montmorillonite containing phosphoric acid in an amount sufficient to efficiently catalyze the hydration reaction up to about one part by weight of phosphoric acid per ten parts by weight of montmorillonite, said catalyst being prepared by impregnating acid treated montmorillonite with phosphoric acid to saturation and thereafter bringing said catalyst to said phosphoric acid content by treatment under said operating conditions of 140° to 250° C and about 10 to 100 atmospheres with nitrogen and steam or water until practically no further phosphoric acid is removed.

3,862,250
METHYLENE CHLORIDE STABILIZED WITH ACETONITRILE

Norman L. Beckers, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Feb. 23, 1973, Ser. No. 335,366

Int. Cl. C07c *17/40*, *17/42*

U.S. Cl. 260—652.5 R 2 Claims

1. A stabilized methylene chloride composition consisting essentially of methylene chloride and stabilizing amounts of from about 0.05 to about 2.0 percent by weight of the methylene chloride of each of acetonitrile and propylene oxide.

3,862,251
ORGANO-DILITHIUM INITIATOR FOR ANIONIC POLYMERIZATION, A NOVEL POLYISOPRENE, AND PROCESSES FOR PRODUCTION THEREOF

Ruediger A. H. Strecker, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Arlington, Va.

Filed Feb. 11, 1970, Ser. No. 10,643

Int. Cl. C07f *1/02*

U.S. Cl. 260—665 R 28 Claims

1. An organo-dilithium polymerization initiator which is the product formed by the addition of divinylbenzene to a lower alkyllithium in the molar ratio of one mole of divinylbenzene to at least two moles of alkyllithium.

3,862,252
METHOD OF SELECTIVE HYDROGENATION OF CYCLOPENTADIENE

Shoichi Matsumura; Yasushi Kato, and Masakazu Uekita, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Kita-Ku, Osaka, Japan

Filed Dec. 27, 1973, Ser. No. 428,782

Claims priority, application Japan, Dec. 28, 1972, 47-2448; Jan. 18, 1973, 48-8307; Jan. 18, 1973, 48-8308; June 13, 1973, 48-67089

Int. Cl. C07c *13/12*

U.S. Cl. 260—666 A 10 Claims

1. A method of producing cyclopentene by selective hydrogenation of cyclopentadiene with molecular hydrogen using a catalyst consisting essentially of palladium or palladium and iron disposed on a carrier of magnesium oxide having a surface area smaller than 100 m^2/g.

3,862,253
PROCESS FOR THE PREPARATION OF CYCLOPENTADIENES

Constant M. A. Cramers, Obbicht, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Feb. 25, 1974, Ser. No. 445,547

Claims priority, application Netherlands, Mar. 1, 1973, 7302864

Int. Cl. C07c *13/14*

U.S. Cl. 260—666 A 4 Claims

1. In a process for the thermal conversion in a reaction zone of dicyclopentadiene compound-containing feeds to the corresponding cyclopentadienes in the presence of nitrogen gas diluent, the improvement consisting in removing oxygen from said nitrogen gas to an oxygen level below 10 ppm, preparing a gaseous mixture of said nitrogen with a vaporized dicyclopentadiene, which mixture contains less than 10 ppm of oxygen, and using this mixture as feedstock for the gaseous phase thermal conversion of the dicyclopentadiene into the corresponding cyclopentadiene, while maintaining an absence of any liquid dicyclopentadiene in the reaction zone.

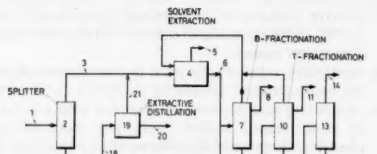
3,862,254
PRODUCTION OF AROMATIC HYDROCARBONS

Karl Heinz Eisenlohr, Buchschlag, Germany; Winfried A. Grosshans, Marlton, N.J., and Toshiyuki Nakajima, Tokyo, Japan, assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.; Nippon Petrochemicals Company Ltd., Tokyo, Japan and Metallgesellschaft Aktiengeselleschaft, Frankfurt/M, Germany

Filed Oct. 16, 1970, Ser. No. 81,366

Int. Cl. C07c *7/10*

U.S. Cl. 260—674 SE 4 Claims



1. In a process for the separation and recovery of benzene, toluene and C_8 aromatic hydrocarbons from an aromatic hydrocarbon-rich charge stock selected from the group consisting of catalytic reformates, hydrogenated pyrolysis gaso-

line, crude benzole and mixtures thereof, which includes the steps of fractionating and solvent extraction, wherein the improvement, whereby enhanced yields particularly of C_8 aromatic hydrocarbons are obtained, comprises:

a. fractionating said aromatic hydrocarbon-rich charge stock to separately obtain
   i. a first fraction containing substantially all of the benzene, toluene and non-aromatic hydrocarbons boiling in the same range and a minor amount of C_8 aromatic hydrocarbons,
   ii. a second fraction containing substantially all of the C_8 aromatic hydrocarbons and non-aromatic hydrocarbons boiling in the same range, and
   iii. a third fraction containing substantially all of the C_9 and C_{10} aromatic hydrocarbons and other hydrocarbons boiling above the second fraction;
b. subjecting the first fraction to liquid-liquid solvent extraction and recovering an aromatic extract;
c. hydrodealkylating the third fraction to yield a product stream comprising benzene, toluene and C_8 aromatic hydrocarbons;
d. combining said product stream of step (c) with said aromatic extract of step (b);
e. fractionating the combined stream of step (d) to separate and recover substantially pure benzene, toluene, and C_8 aromatic hydrocarbons; and
f. extractively distilling the second fraction of step (a) to separate and recover substantially pure C_8 aromatic hydrocarbons;

whereby C_8 aromatic hydrocarbons are recovered in an amount in excess of the amount of C_8 aromatic hydrocarbons present in said aromatic hydrocarbons-rich charge stock.

3,862,255
OXIDATIVE DEHYDROGENATION PROCESSES

Brent J. Bertus, and Darrell W. Walker, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 140,973, May 6, 1971, Pat. No. 3,793,225. This application June 28, 1973, Ser. No. 374,648
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E **8 Claims**

1. A process for the dehydrogenation of a dehydrogenatable aliphatic hydrocarbon feedstock having from 4 to 8 carbon atoms which comprises contacting said feedstock in the vapor phase under dehydrogenation conditions in the presence of molecular oxygen and in the absence of halogen with a catalyst consisting of nickel, at least one Group IIa metal, phosphorus and combined oxygen wherein the IIa:Ni atomic ratio is in the range of 0.5–3:1 and the P:Ni atomic ratio is in the range of 0.01–0.65:1 and optionally from 0.5 to 10 weight percent of an adjuvant selected from the group consisting of Group Ia metals, chromium, vanadium, molybdenum, ruthenium, rhodium, iridium, platinum, palladium and osmium.

5. A process for the dehydrogenation of a dehydrogenatable aliphatic hydrocarbon feedstock having from 4 to 8 carbon atoms which comprises contacting said feedstock in the vapor phase under dehydrogenation conditions in the presence of molecular oxygen and in the absence of halogen with a catalyst consisting of cobalt, at least one Group IIa metal, phosphorus and combined oxygen wherein the IIa:Co atomic ratio is in the range of 0.5–3:1 and the P:Co atomic ratio is in the range of 0.01–0.65:1 and optionally from 0.05 to 10 weight percent of an adjuvant selected from the group consisting of Group Ia metals, chromium, vanadium, molybdenum, ruthenium, rhodium, iridium, platinum, palladium and osmium.

3,862,256
METHOD FOR PREPARING MONO- AND DI-OLEFINE HYDROCARBONS

Anatoly Lvovich Isailingold, ulitsa Chekhova, 25, kv. 31; Veniamin Anatolievich Levin, Svobody, 75/37, kv. 24; Fedor Semenovich Pilipenko, zhskaya naberezhnaya, 25/2, kv. 7; Tatyana Pavlovna Vernova, Uglichskoe shosse, 10, kv. 40; Gennady Arkadievich Stepanov, ulitsa Pervomaiskaya, 9, kv. 3; Alexandr Nikitich Bushin, ulitsa Pervomaiskaya, 9, kv. 21; Boris Vasilievich Sirotkin, ulitsa 1 Zhilaya, 6, kv. 23; Valentin Vasilievich Kozin, ulitsa Kolesovoi, 34, kv. 18; Mark Ekhetskelevich Basner, prospekt Lenina, 36, kv. 30; Aida Vladimirovna Erofeeva, prospekt Lenina, 11/74, kv. 30; Nina Prokopievna Peshkova, Leningradsky prospekt, 59, kv. 49; Luiza Saidovna Tuktarova, ulitsa Junosti, 5, kv. 15; Yakov Yakovlevich Kirnos, ulitsa Pervomaiskaya, 9, kv. 5; Ruslan Konstantinovich Mikhailov, ulitsa Tolbukhina, 45/14, kv. 43; Nikolai Zakharovich Dolinin, prospekt Lenina, 23, kv. 26; Jury Nikolaevich Rastvorov, Tutaevskoe shosse, 51, kv. 50, and Valeria Lvovna Eratova, ulitsa Bljukhera, 36, kv. 5, all of Yaroslavl, U.S.S.R.

Filed Aug. 7, 1972, Ser. No. 278,654
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E **19 Claims**

1. A method for the production of mono- and diolefinic hydrocarbons which comprises passing a feed consisting essentially of a paraffin hydrocarbon, oxygen and an inert diluent selected from the group consisting of steam, nitrogen, argon, helium and mixtures thereof at an oxygen to paraffin hydrocarbon molar ratio of 0.1 to 3.0 over a catalyst at a temperature of from 400° to 700° C., said catalyst consisting essentially of oxygen-containing compounds of molybdenum and magnesium taken in a molybdenum/magnesium atomic ratio of from 1:0.9 to 1:357 and having absorption bands in the infra-red spectrum thereof at the wave numbers of 780 cm^{-1}, 830 cm^{-1}, 890 cm^{-1}, 950 cm^{-1} and 970 cm^{-1}.

3,862,257
MODIFIED ZIEGLER CATALYST FOR ALPHA OLEFIN WAX SYNTHESIS

David Buben; Roby Bearden, Jr., both of Baton Rouge, La., and Harry Jan Wristers, Baytown, Tex., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Apr. 17, 1972, Ser. No. 244,888
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **6 Claims**

1. In a process for preparing a product linear alpha olefins having a number average molecular weight ranging from about 200 to 400, wherein an ethylene-containing gas is polymerized in the presence of a substantially soluble catalyst system formed by mixing components comprising a Group IVB metal compound, said compound having the formula MX_3A wherein M is selected from the group consisting of Ti, Zr and Hf, X is selected from the group consisting of chlorine and bromine and A is selected from the group consisting of chlorine, bromine, and an anion derived from a protonic compound which is an alcohol (R'OH) or a carboxylic acid (R'COOH), R' is selected from the group consisting of alkyl, aryl, aralkyl and cycloalkyl, and an aluminum alkyl compound such that the ultimate formula of the aluminum alkyl compound is $AlR_nX'_{3-n}$, wherein R is selected from the group consisting of alkyl, aralkyl and cycloalkyl and X' is selected from the group consisting of chlorine, bromine, and iodine and n is an integer less than 2, in the presence of a diluent selected from the group consisting of nonpolar aliphatic and naphthenic diluents, and a pressure above 100 psig, wherein the mole ratio of ethylene to the reaction product is maintained above 0.8 mole throughout the reaction and a reaction product is prepared having at least 90 mole percent linear olefins in which the product olefin concentration is greater than 5 weight percent based on the diluent in reaction product, the improvement therewith of adding to the catalytic mixture at least 10 mole percent of a modifier, said modifier

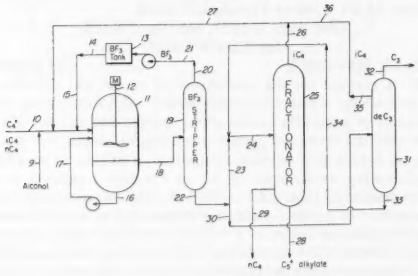
being selected from the group consisting of hexamethylphosphoric triamide and dimethyl formamide, based on moles of a Group IVB metal compound, whereby the selectivity of the catalyst is greatly enhanced for the formation of linear alpha olefins of number average molecular weight in the range of 200–400.

3,862,258

ISOPARAFFIN-OLEFIN ALKYLATION WITH ADDED WATER AND WITH A COMPLEX OF A MACRORETICULAR ACID CATION EXCHANGE RESIN AND BF

Tracy J. Huang, Trenton, N.J.; Anthony J. Silvestri, Morrisville, and Sergei Yurchak, Washington Crossing, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,339
Int. Cl. C07c *3/52*
U.S. Cl. 260—683.44 **24 Claims**



1. The process for alkylating an isoparaffin having from 4 to 8 carbon atoms with an olefin containing from 2 to 12 carbon atoms by contacting said isoparaffin and said olefin in the liquid state with a catalyst complex in an alkylation reaction zone maintained at a temperature between about −20°C. and about 150°C. in the presence of a small amount, less than 400 ppm of added water based on said isoparaffin and said olefin to increase the cycle life of said catalyst complex, said catalyst complex comprising a macroreticular acid cation exchange resin and boron trifluoride, said resin being characterized by a water content between about 0.5 and about 20 weight percent and a surface acid concentration of between 0.001 and about 0.5 milliequivalents of hydrogen ion per square meter surface area said boron trifluoride being present in said reaction zone in an amount in excess of that needed to saturate said resin to form said complex, the molar ratio of said isoparaffin to said olefin being between about 2 and about 50, withdrawing a hydrocarbon product mixture from said reaction zone and separating an alkylate hydrocarbon product from said mixture.

3,862,259

REINFORCED RUBBER COMPOSITIONS

Michel Van Russelt, Brussels; Claude Bleiman, and Jean Mercier, both of Kessel-Lo, all of Belgium, assignors to GERDEC, Paris, France

Filed July 11, 1973, Ser. No. 378,211
Claims priority, application France, July 11, 1972, 72.25031
Int. Cl. C08c *11/10, 11/16, 11/18*
U.S. Cl. 260—754 **14 Claims**

1. In a rubber composition comprising cis-1,4 polyisoprene curable or vulcanizable to an elastomer and a suitable curing or vulcanizing agent, the improvement which comprises 5–150 parts by weight per 100 parts by weight of said polyisoprene of a strengthening filler combination wherein the amount of each filler component used is 25–75 percent of the weight of each individual component which would be required when used alone to give a desired hardness to the cured elastomer, said strengthening filler comprising:

a. 25–75 percent of said required weight of an organomineral polymeric material consisting essentially of a siliceous mineral two-dimensional framework of a phyllosilicate having at least a tetrahedral layer consisting essentially of silicon and oxygen and an octahedral layer consisting essentially of oxygen and metallic atoms other than silicon, and organic radicals having two to 12 carbon atoms having at least one ethylenic double bond linked by Si-O-Si siloxane bonds to said tetrahedral layer of said phyllosilicate, at least 5 percent by weight of the metallic atoms having been removed from the octahedral layer of the phyllosilicate and substituted by said organic radicals, 1 to 30 percent of the silicon atoms of said tetrahedral layer of said phyllosilicate having said organic radicals grafted on them by Si-O-Si bonds, and containing 0.2–20 wt. percent grafted carbon; and

b. correspondingly 75–25 percent of said required weight of carbon black, silica or mixtures thereof.

3,862,260

EPOXY CURING SYSTEM

Ralph F. Sellers, and James R. Harvey, both of Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 357,614
Int. Cl. C08g *45/08*
U.S. Cl. 260—831 **6 Claims**

1. A curable composition comprising an epoxide having more than one glycidyl group per molecule and in an amount sufficient to provide about 0.5 to about 1.5 phenolic hydroxyl groups per epoxide equivalent, a curing agent comprising a trifunctional hardener of the reaction product of 2,2'-bis(4-hydroxyphenyl) propane, "with formaldehyde in about a 1:1 molar ratio under alkaline conditions, followed by reaction with excess phenol under acidic conditions," and an imidazole in an amount of about 0.1 part by weight to about 15 parts by weight per 100 parts by weight of the said hardener.

3,862,261

MELAMINE RESIN-POLYOL-POLYURETHANE COATING COMPOSITION AND ARTICLE COATED THEREWITH

Darrell D. Stoddard, Malibu, Calif., assignor to Ophthalmic Sciences, Inc., Santa Monica, Calif.

Filed Oct. 3, 1973, Ser. No. 402,953
Int. Cl. C08g *37/32*
U.S. Cl. 260—849 **8 Claims**

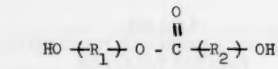
1. A coating composition comprising a melamine resin, a polyol and a polyurethane, dissolved in a solvent which will evaporate when a coating of said composition is applied to an article, the weight ratio of the melamine resin to the polyurethane being about 8 to 1, the weight ratio of the polyol to the polyurethane varying from about 2.5 to 1 to 1 to 1, wherein:

a. said melamine resin is selected from the group consisting of the tri- through hexa- substituted alkoxy ethers of formaldehyde- and acetaldehydemelamine condensation products, wherein the alkoxy substituent contains from 1 to 4 carbon atoms;

b. said polyol is selected from the group consisting of a polyglycol, an ester diol and an alkyl diol wherein:

1. said polyglycol is a polyethylene- or polypropyleneglycol having a degree of polymerization in the range of from about 4 to 44;

2. said ester diol has the formula



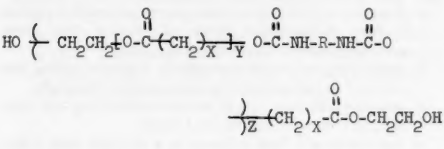
wherein R_1 and R_2 are each selected from a member of the group of straight or branched chain saturated aliphatics containing from 3 to 8 carbon atoms; and

3. said alkyl diol has the formula

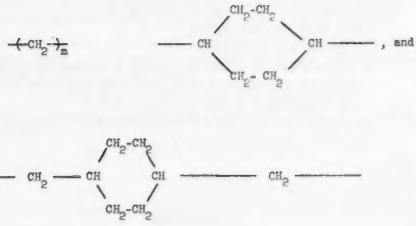
$$HO - CH_2 -_K OH$$

wherein K is in the range from 3 to 8; and

c. said polyurethane is selected from the group consisting of those compounds having the general formula



wherein X is about 2 to 12; Y is about 1 to 4; Z is about 1 to 20; and R is selected from the group consisting of



wherein m varies from about 2 to 8.

3,862,262

LACTAM-POLYOL-ACYL POLYACTAM TERPOLYMERS

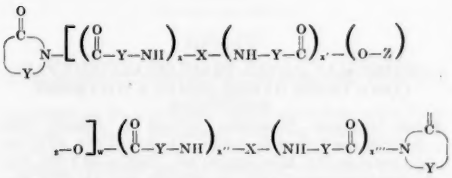
Ross Melvin Hendrick, Creve Coeur, and James D. Gabbert, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1973, Ser. No. 423,591

Int. Cl. C08g *41/04*

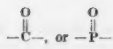
U.S. Cl. 260—857 PG **21 Claims**

1. A lactam-polyol-acyl polylactam block terpolymer having the general formula:



wherein $(O—Z)_s$ is a polymeric moiety and Z is a hydrocarbon or substituted hydrocarbon group said group being alkylene, arylene, alkylene carbonyl, arylene carbonyl, and mixtures thereof;

X is an acyl group selected from



Y is an alkylene or substituted alkylene having from about 3 to about 14 carbon atoms;

x, x', x'', and x''' are integers and the total number of x's equal to $2w + 2$; and

z and w are integers equal to one or more.

3,862,263

PRODUCTION OF MODIFIED POLYPHENYLENE OXIDE

Isao Maruta, Takatsuki; Seizo Nakashio, Nishinomiya; Kazuo Hayatsu, and Yoichi Kono, both of Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 92,874, Nov. 25, 1970, abandoned. This application Feb. 21, 1973, Ser. No. 334,356

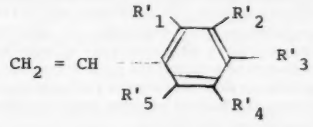
Claims priority, application Japan, Nov. 29, 1969, 44-95834; Dec. 4, 1969, 44-97715; Dec. 4, 1969, 44-97716

Int. Cl. C08f *41/12*

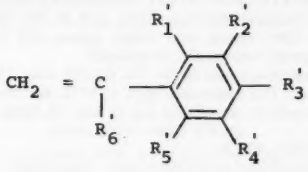
U.S. Cl. 260—874 **8 Claims**

1. A process for producing modified polyphenylene oxide which consisting essentially of

1. polymerizing 0.4 to 2 parts by weight of at least one styrene compound represented by the formula,

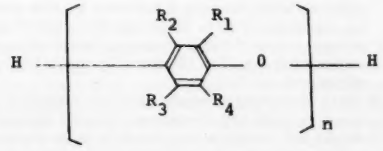


wherein R'_1, R'_2, R'_3, R'_4 and R'_5 are independently a hydrogen atom, a halogen atom, a cyano group, a nitro group, an amino group, an hydroxy group, a carboxyl group, a hydrocarbon or a halogen-or a cyano-substituted hydrocarbon group having 12 or less carbon atoms, or a hydrocarbonoxy or a halogen- or hydrocarbonoxy-substituted hydrocarbonoxy group having 12 or less carbon atoms, or a mixture of said styrene compound with an α-substituted styrene represented by the formula,



wherein R'_1, R'_2, R'_3, R'_4 and R'_5 are as defined above, and R'_6 is a hydrocarbon group having 12 or less carbon atoms

in the presence of 1 part by weight of a polyphenylene oxide having a structure represented by the formula,



wherein R_1, R_2, R_3, and R_4 are independently a hydrogen atom, a halogen atom, a hydrocarbon or a halogen- or cyano-substituted hydrocarbon group having 12 or less carbon

atoms, or a hydrocarbonoxy or a halogen- or cyano-substituted hydrocarbonoxy group having 12 or less carbons; and n represents the degree of polymerization, and is an integer greater than 50

in an aqueous dispersion containing water in an amount of 1 to 10 parts by weight per 1 part by weight of the mixture of polyphenylene oxide and styrene compound and a dispersion stabilizer or said dispersion stabilizer and at least one member selected from the group consisting of a surface active agent and an adhesion-preventing agent in an amount of 0.01 to 1.5% by weight based on the weight of the water and a radical initiator or

2. polymerizing 15 to 60 parts by weight of a styrene compound as defined above, or a mixture of said styrene compound with an α-substituted styrene as defined above in the presence of 85 to 40 parts by weight of a mixture comprising 74 to 96% by weight of a polyphenylene oxide as defined above and 26 to 4% by weight of a rubbery polymer selected from the group consisting of polybutadiene, polyisoprene, polychloroprene, a butadiene-styrene copolymer, a butadiene-styrene block copolymer, a polybutadiene-styrene graft copolymer, a polyisoprene-styrene graft copolymer, an isoprene-styrene copolymer, an isobutyleneisoprene copolymer, a polybutadiene-acrylonitrile-styrene graft copolymer, a butadiene-acrylonitrile copolymer, a polybutadiene-styrene-α-methylstyrene graft copolymer, a polybutadiene-styrene-methylmethacrylate graft copolymer, a poly-(butadiene-styrene)-styrene graft copolymer, a poly-(butadiene-styrene)-styrene graft copolymer, a poly-(butadiene-styrene)-styrene-acrylonitrile graft copolymer, a poly-(butadiene-acrylonitrile)-styrene graft copolymer, a poly-(butadiene-acrylonitrile)-styrene graft copolymer and an ethylene-styrene copolymer

in an aqueous dispersion containing water in an amount of 1 to 10 parts by weight per 1 part by weight of the mixture of polyphenylene oxide, rubbery polymer, and styrene compound and a dispersion stabilizer or said dispersion stabilizer and at least one member selected from the group consisting of a surface active agent and an adhesion-preventing agent in an amount of 0.01 to 1.5% by weight based on the weight of the water and a radical initiator.

3,862,264

CHLORINATED POLYVINYL CHLORIDE COMPOSITION

Yosuhiro Nojima; Horiharu Ikeda, both of 700, Torgainishi, Settsu City, Osaka, and Akira Amou, 456 Kariwake, Tsukaguchi, Amagasaki, all of Japan

Continuation-in-part of Ser. No. 63,025, Aug. 11, 1970, abandoned. This application Sept. 7, 1972, Ser. No. 286,847
Claims priority, application Japan, Aug. 30, 1969, 44-68859
Int. Cl. C08f *15/00, 19/00*
U.S. Cl. 260—876 R **11 Claims**

1. A chlorinated polyvinylchloride composition comprising a blend of

1. 10 to 70 percent by weight of chlorinated vinyl chloride resin having chlorine content of from 61 to 70 percent and specific viscosity (η_{sp}) of from 0.18 to 0.35; and
2. 90 to 30 percent by weight of a resin blend consisting essentially of

A. 80 to 40 percent by weight of resin copolymer prepared by copolymerizing a monomer mixture consisting essentially of 30 to 80 percent by weight of alpha methyl styrene, 5 to 50 percent by weight of methyl methacrylate, and 3 to 30 percent by weight of acrylonitrile, and

B. 20 to 60 percent by weight of a graft copolymer prepared by graft copolymerizing 35 to 65 percent by weight of a monomer mixture of 25 to 80 percent by weight of styrene,, 10 to 75 percent by weight of methyl methacrylate, and 0 to 25 percent by weight of acrylonitrile onto 65 to 35 percent by weight of a butadiene homopolymer or copolymer containing more than 50 percent by weight of butadiene copolymerized with other monoolefinic monomers.

3,862,265

POLYMERS WITH IMPROVED PROPERTIES AND PROCESS THEREFOR

Robert A. Steinkamp, and Thomas J. Grail, both of Baytown, Tex., assignors to Exxon Research and Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 132,838, April 9, 1971, abandoned. This application Apr. 3, 1972, Ser. No. 240,494
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 R **80 Claims**

1. A process for modifying the rheological or chemical and rheological properties of a polymer which is normally solid at room temperature, which comprises in combination the steps of:

a. introducing said polymer into an extruder with a moving positive displacement screw of varying root cross-sectional areas to define a reaction zone;
b. generating an above-atmospheric pressure within said extruder as said polymer is conveyed therethrough;
c. applying sufficient heat in addition to working said polymer, to convert it into its fluid form;
d. conveying said fluid polymer to a reaction zone within said extruder where polymer volume is controlled to be less than said reaction zone volume, thereby causing a reduced pressure within said zone;
e. introducing into said reduced pressure zone, while said polymer is substantially fluid, sufficient of a material selected from the group consisting of
i. one or more monomers;
ii. free-radical initiator;
iii. a combination of the foregoing; to measurably change either the rheological or chemical properties or both of said properties of said polymer; and
f. conveying the resultant modified polymerr through the remainder of the extrusion process.

3,862,266

POLYPROPYLENE/ACRYLIC ACID GRAFT COPOLYMERS

Richard L. McConnell; Robert B. Taylor, and Peter M. Grant, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 258,794, June 1, 1972, abandoned. This application Feb. 26, 1973, Ser. No. 336,155
Int. Cl. C08F *15/00*
U.S. Cl. 260—878 R **16 Claims**

1. A graft copolymer comprised of normally solid polypropylene and from about 0.2 to about 1.5 percent by weight based on the polypropylene of reacted unsaturated acid component, at least 75 mole percent of which is acrylic acid, said graft copolymer having a melt flow rate of from about 15 to about 175 g./10 minutes at 230°C., and being processable into a powder which can be applied to substrates and fused to form coatings.

3,862,267

CHEMICALLY JOINED, PHASE SEPARATED GRAFT COPOLYMERS HAVING DIBLOCK POLYMERIC SIDECHAINS

Ralph Milkovich, Naperville; Mutong T. Chiang, Palos Heights, and Gerald O. Schulz, Downers Grove, all of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 282,099, Aug. 21, 1972, Pat. No. 3,786,116, which is a continuation-in-part of Ser. No. 244,205, April 14, 1972, Pat. No. 3,832,423, which is a continuation-in-part of Ser. No. 117,733, Feb. 22, 1971, abandoned. This application Apr. 2, 1973, Ser. No. 347,040
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 R **39 Claims**

1. A chemically joined, phase separated thermoplastic graft copolymer of:

a. a polymerizable comonomer comprising at least one ethylenically-unsaturated monomer and mixtures thereof; and copolymerized with

b. a polymerizable monofunctional macromolecular monomer comprising a linear copolymer having a molecular weight in the range of from about 5,000 to about 150,000 and having a substantially uniform molecular weight distribution such that its ratio of Mw/Mn is less than about 1.1, said macromolecular monomer being further characterized as having no more than one terminal vinyl moiety per linear copolymer chain, said linear copolymer being a diblock copolymer of the formula:

$$A - B - X$$

wherein A is a polymerized monoalkenyl-substituted aromatic hydrocarbon having a molecular weight in the range of from about 2,000 to about 65,000 , B is a polymerized conjugated diene having a molecular weight between about 1500 and 100,000, and X is a polymerizable end group containing a vinyl moiety.

3,862,268

O-ALKYL-S-(CARBAMOYLOXY-METHYL)-(THIONO) THIOLPHOSPHORIC (PHOSPHONIC) ACID ESTERS

Gerhard Schrader, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

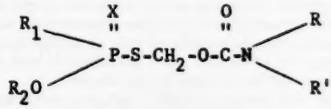
Filed Feb. 7, 1973, Ser. No. 330,539

Claims priority, application Germany, Feb. 11, 1972, 2206678

Int. Cl. A01n 9/36; C07f 9/16

U.S. Cl. 260—938 **7 Claims**

1. An O-alkyl-S-[carbamoyloxymethyl]-(thiono)thiolphosphoric (phosphonic) acid ester of the formula



in which

R_1 is lower alkyl, lower alkoxy or phenyl,

R_2 is lower alkyl,

R is hydrogen, alkyl or phenyl,

R′ is hydrogen or alkyl with 1 to 3 carbon atoms, and

X is oxygen or sulfur.

3,862,269

1-CARBALKOXY-2-CYANO-VINYL-(THIONO)-PHOSPHORIC ((PHOSPHONIC) ACID ESTERS OF ESTER AMIDES

Fritz Maurer; Hans-Jochem Riebel; Lothar Rohe, all of Wuppertal; Ingeborg Hammann; Wolfgang Behrenz, both of Cologne, and Bernhard Homeyer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

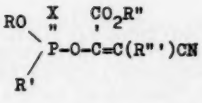
Filed Mar. 14, 1973, Ser. No. 341,188

Claims priority, application Germany, Mar. 17, 1972, 2212906

Int. Cl. A01n 9/36; C07f 9/08, 9/16

U.S. Cl. 260—940 **7 Claims**

1. A 1-carbalkoxy-2-cyano-vinyl-(thiono)-phosphoric(phosphonic) acid ester or ester amide of the formula



in which

R and R″ are alkyl of 1 to 6 carbon atoms,

R′ is alkyl, alkoxy or monoalkylamino of 1 to 6 carbon atoms, or phenyl,

R‴ is hydrogen or alkyl of 1 to 20 carbon atoms, and

X is oxygen or sulfur.

3,862,270

SECONDARY PHOSPHORIC ACID ESTERS

Knut Bertil Hogberg; Hans Jacob Fex, both of Helsingborg; Bo Goran Fredholm, Nyhamnslage; Torsten Rune Perklev, Helsingborg, and Sten Gunner Veige, Helsingborg, all of Sweden, assignors to Aktiebolaget Leo, Helsingborg, Sweden

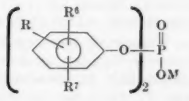
Filed Jan. 5, 1972, Ser. No. 215,671

Claims priority, application Great Britain, Aug. 17, 1971, 38619/71; Nov. 10, 1971, 52303/71

Int. Cl. C07f 9/12

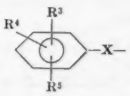
U.S. Cl. 260—946 **42 Claims**

1. A symmetrical secondary phosphoric acid ester compound of the general formula



(I)

wherein R is positioned in m- or p-position relative to the phosphoric acid ester group and is



wherein X is selected from the group consisting of

and

wherein Y is a straight hydrocarbon chain having 2 or 3 carbon atoms, said chain being saturated or containing one double bond and having at most 2 substituents selected from the group consisting of lower alkyl, phenyl, phenyl substituted in p-position by halogen (F, Cl, Br), benzyl and benzyl substituted in p-position by halogen (F, Cl, Br); R^3, R^4, R^5, R^6 and R^7 are same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, hydroxy, $OCOR^8$, F, Cl, Br, CF_3, NO_2, wherein R^8 is lower alkyl, where M is selected from the group consisting of H, Na, K ½ Ca and a pharmaceutically acceptable amine.

3,862,271

O-ALKYL-(THIONO) THIOL-S-(S-ALKYLMERCAPTO-S-ENZYLMERCAPTO-METHYL)-PHOSPHORIC (PHOSPHONIC) ACID ESTERS

Gerhard Schrader, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

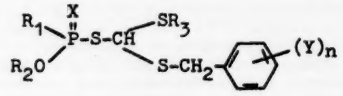
Filed Feb. 27, 1973, Ser. No. 336,316

Claims priority, application Germany, Mar. 7, 1972, 2210836

Int. Cl. A01n *9/36*; **C07f** *9/16, 9/40*

U.S. Cl. 260—948 **7 Claims**

1. A thiol- or thionothiol-phosphoric or -phosphonic acid ester of the formula



in which

R_1 is alkyl, halo substituted alkyl, alkoxy or halo substituted alkoxy of 1 to 6 carbon atoms,

R_2 is alkyl or halo substituted alkyl of 1 to 6 carbon atoms,

R_3 is alkyl of 1 to 6 carbon atoms,

X is oxygen or sulfur,

Y is chlorine, and

n is 0, 1 or 2.

3,862,272

O-ALKYL-S-(2,3-DICHLOROALLYL) -(THIONO)THIOL-HOSPHONIC ACID ESTERS

Gerhard Schrader, Wuppertal; Ingeborg Hammann, Koeln, and Bernhard Homeyer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

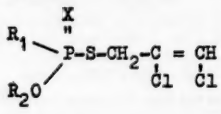
Filed Feb. 27, 1973, Ser. No. 336,317

Claims priority, application Germany, Mar. 4, 1972, 2210604

Int. Cl. A01n *9/39*; **C07f** *9/16, 9/40*

U.S. Cl. 260—956 **5 Claims**

1. A thiol- or thionothiol-S-(2,3-dichloroallyl)phosphonic acid ester of the formula



in which

R_1 is C_1-C_6 alkyl or phenyl,

R_2 is C_1-C_6 alkyl, and

X is oxygen or sulfur.

3,862,273

PREPARATION OF 0-ARYL 0,0-DIALKYL PHOSPHOROTHIOATES

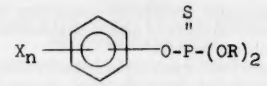
Lorraine M. Kroposki, Walnut Creek, Calif., and Masao Yoshimine, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 28, 1973, Ser. No. 345,583

Int. Cl. C07f *9/18*

U.S. Cl. 260—973 **4 Claims**

1. In the process for preparing 0,0-di-(loweralkyl)phosphorothioate esters corresponding to the formula



wherein X represents chloro or bromo; n represents an integer of from 0 to 3 and R represents loweralkyl of from 1 to 5 carbom atoms wherein equimolar amounts of a 0,0-di(loweralkyl)phosphorochloridothioate and phenol or a chloro or bromo substituted phenol are reacted at a temperature of from about 10° and about 120°C. and at a pH of from about 8 to about 13, the improvement which comprises carrying out the reaction in the presence of a reaction medium consisting of from about 1 to about 3 moles of water per mole of the combined phosphorochloridothioate and phenolic reactants and from about 0.1 to about 2 moles of a water immiscible organic solvent per mole of the combined phosphorochloridothioate and phenolic reactants and thereafter recovering the 0,0-di(loweralkyl)phosphorothioate ester so produced.

3,862,274

PREPARATION OF NITRILE POLYMERS WITH CYCLOALIPHATIC MERCAPTANS AS POLYMERIZATION MODIFIERS

Charles W. Moberly, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 12, 1973, Ser. No. 378,633

Int. Cl. C08f *15/22, 15/38, 19/18*

U.S. Cl. 260—879 **26 Claims**

1. In a graft polymerization process for preparing a nitrile polymer which comprises polymerizing at least one polymerizable vinylnitrile monomer which is an alpha,beta-olefinically unsaturated nitrile, with at least one unsaturated rubbery polymer characterized as having sufficient unsaturation to be vulcanizable, and in the presence of a free radical polymerization initiator under free radical polymerization conditions employing a molecular weight modifier, the improvement which comprises employing as said molecular weight modifier at least one cycloaliphatic mercaptan characterized as a saturated monocyclic carbocyclic mono- or dithiol compound containing 5 to 15 carbon atoms per molecule with 5 to 12 carbon atoms in the carbocyclic ring thereof,

wherein said process employs said vinylnitrile and said unsaturated rubber in proportions sufficient such that said nitrile polymer contains about 10 to 95 weight percent derived from said vinyl-nitrile, about 5 to 50 weight percent from said unsaturated rubbery polymer and wherein said process further can employ an olefinically unsaturated copolymerizable comonomer which is a vinylidene group-containing or substituted vinylidene group-containing monomer, other than said alpha,beta-olefinically unsaturated nitrile, such that the resulting nitrile polymer contains from 0 to about 75 weight percent derived from said olefinically unsaturated copolymerizable comonomer.

3,862,275

METHOD OF PREPARING POLYALKYLENE GLYCOL ALKYL POLYPHOSPHITES

Kyung Sup Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Nov. 8, 1971, Ser. No. 198,026

Int. Cl. C07f *9/08*

U.S. Cl. 260—982 **4 Claims**

1. A process for preparing liquid polyalkylene glycol polyphosphites comprising the steps of:

a. reacting a polyalkylene glycol with a tertiary alkyl phosphite in a mole ratio of at least two moles of said phosphite for each mole of said glycol in the presence of a transesterification catalyst and at a temperature in the range of from about 80° C. to about 200°C., and

b. adding to and reacting with the resultant polyalkylene glycol phosphite product of step (a) an additional mole of said glycol for each mole of said glycol used in step (a) in the presence of a transesterification catalyst and at a temperature in the range of from about 80°C. to about 200°C.

3,862,276
PREPARATION OF O-(2,2-DICHLOROVINYL)-THIONOPHOSPHORIC ACID ESTER DICHLORIDE

Wilhelm Sirrenberg, Sprockhoevel, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

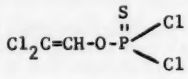
Division of Ser. No. 267,746, June 30, 1972, abandoned. This application Aug. 8, 1973, Ser. No. 386,682

Claims priority, application Germany, July 3, 1971, 2133198

Int. Cl. C07f 9/20

U.S. Cl. 260—985 **5 Claims**

1. A process for the preparation of O-(2,2-dichlorovinyl)-thionophosphoric acid ester dichloride of the formula



which comprises contacting phosphorus (V) sulfide with O-(2,2-dichlorovinyl)-phosphoric acid ester dichloride at a temperature of about 110°C to 160°C in the presence of phosphorus sulfochloride as solvent.

3,862,277
PREPARATION OF O,O-DIALKYL-O-(2,2-DICHLOROVINYL)-THIONOPHOSPHORIC ACID ESTERS

Wilhelm Sirrenberg, Sprockhovel/I.W., and Reimer Colln, Wuppertal-Elberfeld, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

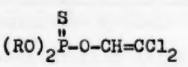
Filed July 24, 1973, Ser. No. 382,235

Claims priority, application Germany, Aug. 8, 1972, 2238921

Int. Cl. C07f 9/16; A01n 9/36

U.S. Cl. 260—986 **10 Claims**

1. A process for the production of an 0,0-dialkyl-0-(2,2-dichlorovinyl)-thionophosphoric acid ester of the formula

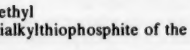


(I),

in which

R is methyl or ethyl

in which an 0,0-dialkylthiophosphite of the formula



(II),

is reacted with chloral in the presence of a catalytic amount of an amine, with subsequent reaction with an equimolar amount of an alkali metal alcoholate at a temperature below 40°C.

3,862,278
CONTROL MECHANISM FOR CARBURETOR AUTOMATIC CHOKE

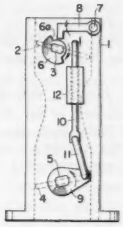
Masahiko Nakada, Aichi-ken, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Nov. 15, 1973, Ser. No. 415,942

Claims priority, application Japan, Nov. 29, 1972, 47-118894

Int. Cl. F02m 1/10

U.S. Cl. 261—52 **5 Claims**



1. In a carburetor for an internal combustion engine having a carburetor body, a throttle valve, an automatic choke mechanism including a choke valve, and means for automatically controlling operation of said choke mechanism in response to temperature or air flow conditions in said engine, the combination comprising: a cam connected to move with said choke valve; stopper means pivotally mounted on said carburetor body and positioned for engagement with said cam to restrict opening of said choke valve; and a push rod mounted for reciprocal movement in response to movement of said throttle valve; said stopper means being located in the path of said push rod to be engaged thereby for pivotal motion of said stopper means to a position preventing engagement thereof with said cam; said choke valve being restricted from opening beyond a predetermined position by engagement of said cam with said stopper means when said throttle valve opening is less than a predetermined degree, with said restriction being removed by engagement of said push rod with said stopper means when said throttle valve opening is greater than said predetermined degree.

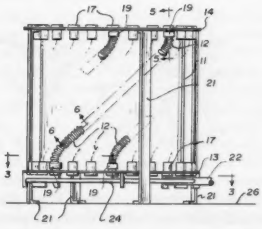
3,862,279
SUBSURFACE AERATOR AND MIXER

Walter Andersen, Sr., 1443 W. Birchlawn Pl., Ottawa, Ill. 61350

Filed June 26, 1973, Ser. No. 373,903

Int. Cl. B01f 3/04

U.S. Cl. 261—77 **16 Claims**



1. Apparatus for sub-surface aeration and circulation of a body of liquid comprising at least one generally vertical helical conduit, said conduit having open unrestricted upper and lower ends, at least part of the inner surface of said conduit

being provided with a plurality of transverse, generally parallel, inwardly-extending ridges positioned approximately perpendicularly to the axis of said conduit for breaking up bubbles of gas passing through said tube, thereby decreasing cavitation and slugging;

nozzle means located below the lower end of said conduit for generating an upwardly flowing stream of bubbles of air or other gas directed into said lower end; and

means for supplying compressed air or other gas to said nozzle means.

3,862,280

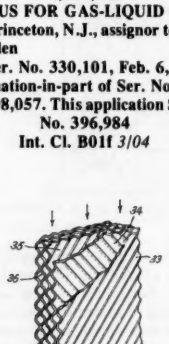
APPARATUS FOR GAS-LIQUID CONTACT

Walter Polovina, Princeton, N.J., assignor to AB Carl Munters, Sollentuna, Sweden

Continuation of Ser. No. 330,101, Feb. 6, 1923, abandoned, which is a continuation-in-part of Ser. No. 186,768, Oct. 5, 1971, Pat. No. 3,798,057. This application Sept. 13, 1973, Ser. No. 396,984

Int. Cl. B01f *3/04*

U.S. Cl. 261—112 **6 Claims**



1. Apparatus for gas-liquid contact having means for mounting a contact body therein and a contact body comprising a plurality of facially opposed corrugated sheets with the corrugations in adjacent sheets being disposed at an angle to each other and the corrugations in alternate sheets being disposed parallel to form a plurality of criss-crossing channels for gas and liquid, said corrugated sheets being a fibrous web impregnated with from 10 to 30 percent, by weight of the impregnated web, of a mixture comprising a chlorinated polymeric C_3 or C_5 hydrocarbon, about 5 to about 100 percent, by weight of said polymer, of a chlorinated terphenyl or chlorinated paraffin; and about 0.5 to about 10 percent, by weight of said polymer, of a polyglycidyl ether of a polyphenol.

3,862,281

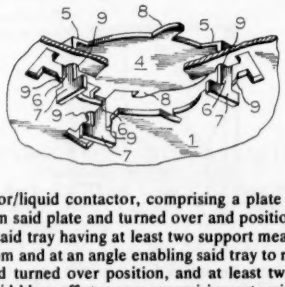
VAPOR/LIQUID CONTACTOR

Takashi Uchiyama, 1085-6, Kayada-cho, Yachiyo, Japan

Filed Nov. 23, 1973, Ser. No. 418,449

Int. Cl. B01f *3/04*

U.S. Cl. 261—114 VT **10 Claims**



1. A vapor/liquid contactor, comprising a plate and a tray formed from said plate and turned over and positioned above said plate, said tray having at least two support means extending therefrom and at an angle enabling said tray to rest on said plate in said turned over position, and at least two blow-off stoppers, said blow-off stoppers comprising extensions of said tray bent at least once at a right angle whereby said tray in a first position rests upon said plate above an orifice created by said tray being removed from said plate, with said stopper extending below said plate and in a blow-off position a portion of said stopper is held against the bottom surface of said plate with an opening between said plate and said tray.

3,862,282

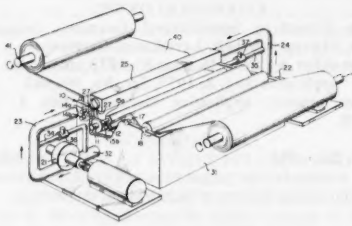
HYDRODYNAMIC RETICULATION OF POLYURETHANE FOAM

George A. Watson, Davidson, N.C., assignor to Reeves Brothers Inc., New York, N.Y.

Filed Nov. 18, 1969, Ser. No. 877,740

Int. Cl. B29c *17/08;* **B29d** *7/20, 27/04*

U.S. Cl. 264—41 **12 Claims**



1. A process for modifying polyurethane foam having cellular membranes to achieve a reticulated foam structure comprising applying a hydrodynamic force to the foam surface, the force being sufficient to rupture substantially all of the cellular membranes without destroying the skeletal structure of the foam.

3,862,283

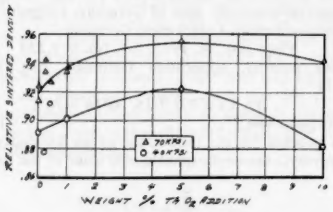
METHOD FOR SINTERING A YTTRIA STABILIZED ZIRCONIA BODY INCORPORATING THORIUM OXIDE AS A SINTERING AID

William H. Rhodes, Lexington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 28, 1973, Ser. No. 392,387

Int. Cl. C04b *35/64, 35/70, 35/48*

U.S. Cl. 264—56 **2 Claims**



1. A method for effecting the sintering of yttria stabilized zirconia comprising the steps of

a. forming an intimate mixture in dry powder form composed of about 0.2 to 10.0 percent by weight of thorium oxide with the balance substantially all yttria stabilized zirconia;

b. compressing said powdered mixture into a body of predetermined shape; and

c. sintering said compressed body at a temperature of from about 1400° to 1900°C for a period of about 4 to 19 hours thereby forming a sintered zirconia body stabilized to its cubic crystalling form.

3,862,284

PROCESS FOR PRODUCING BLOW MOLDED THERMOPLASTIC ARTICLES HAVING IMPROVED BARRIER PROPERTIES

Dale D. Dixon, Kutztown; Donald G. Manly, and Gerald W. Recktenwald, both of Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Wayne, Pa.

Filed May 10, 1973, Ser. No. 358,985
Int. Cl. B29c *17/07*, *25/00*; C08f *27/03*
U.S. Cl. 264—83 8 Claims

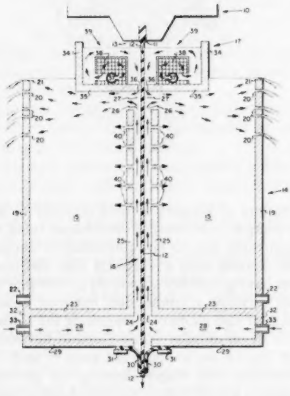
1. In a process for the production of blow molded thermoplastic articles wherein a parison of a thermoplastic selected from the group consisting of polymers and copolymers of polystyrene, polyacrylonitrile, polyvinyl chloride, and polyolefins of at least one aliphatic mono-1-olefin having a maximum of 8 carbon atoms per molecule is formed and said parison is then expanded within a closed mold to conform to the contour of said mold by a fluid medium, the improvement which comprises mixing into said fluid medium about 0.1% to 10% by volume fluorine, the balance of said fluid medium being an inert gas, prior to expanding said parison and recovering the resulting article having improved barrier properties.

3,862,285

PRODUCTION OF THERMOPLASTIC SHEET

Howard C. North, Baytown, Tex.; Harry W. Sherman, Palatine, Ill., and Edward B. Kaplan, Springfield, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Division of Ser. No. 134,598, April 16, 1971, Pat. No. 3,717,425. This application Sept. 13, 1972, Ser. No. 288,485
Int. Cl. B29d *7/20*; B29c *17/00*
U.S. Cl. 264—89 9 Claims



1. A process for producing a thermoplastic sheet comprising:

a. extruding a thermoplastic resin in the form of a molten thermoplastic sheet;

b. passing said sheet through an air gap sized to provide minimum cooling by air; and thereafter

c. passing said sheet downwardly through a primary cooling zone, entering said zone through an exposed upper surface and exiting said zone through a submerged bottom exit, said zone being characterized by continuous streams of cooling liquid entering said primary zone on both sides of said sheet and directed to flow parallel to said exposed upper surface and toward said entering sheet, whereby said exposed upper surface is moving in laminar flow, said cooling stream passing cocurrently downward in laminar flow adjacent said sheet on both sides thereof and exiting said primary zone along with said sheet; and thereafter

d. passing said sheet downwardly through a relief zone below said primary zone and contiguous therewith and cooling said sheet therein; and thereafter

e. passing said sheet downwardly into a secondary cooling zone below said relief zone of (d) and contiguous therewith and further cooling said sheet by countercurrently flowing secondary cooling liquid streams flowing upwardly adjacent both sides of said sheet, said secondary cooling streams entering near the outlet of said sheet from said zone and exiting into said relief zone of (d); and thereafter

f. withdrawing said primary and secondary liquids from said relief zone at a rate sufficient to maintain a desired fluid depth in said primary zone and to establish the minimum air gap of (b);

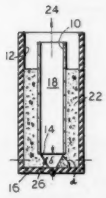
g. withdrawing said cooled sheet from said secondary zone.

3,862,286

METHOD OF FABRICATING COMPACTED POWDERED METAL EXTRUSION BILLETS

Richard Couchman, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 10, 1972, Ser. No. 296,013
Int. Cl. B22f *1/0*
U.S. Cl. 264—111 3 Claims



1. In the formation of composite multi-metal extrusion billets for the high yield extrusion of selectively clad metal products, the steps of

positioning an elongate, hollow open-ended and relatively thin-walled core member of a first predetermined configuration within a closed-end deformable outer shell member of larger transverse dimension and of substantially commensurate length therewith with one open end of said core member disposed in abutting relation with the closed-end defining wall portion of said shell member to define a plurality of powdered metal receiving cavities therein,

introducing a first finely divided cladding metal powder material having a predetermined angle of repose into the cavity defined by and disposed intermediate said core member and said shell member in sufficient quantity to at least partially fill said cavity,

axially displacing said core member to position said open end thereof in predetermined spaced relation with the closed end defining wall portion of said shell member to permit said previously introduced cladding powder to flow into the core cavity and to there assume a generally conical end cap configuration as determined by its angle of repose,

introducing a second finely divided core metal powder material of metallurgical characteristics different from those of said first powder material into a cavity disposed within and defined by said hollow core member and conical end cap configuration in sufficient quantity to at least partially fill said cavity,

axially removing said core member from said shell member to introduce the particles of said first and second metal powders disposed in abutting relation with the inner and outer surfaces of said core member into intimate interfacially engaged relation,

sealing said deformable shell member,

and isostatically subjecting said sealed deformable shell member and its contents to hydrostatic pressure to compact said powdered metal contents thereof to a predetermined desired density without appreciable change in the relative physical positional disposition of said first metal material to said second metal material.

3,862,287

PRODUCTION OF FIBRE REINFORCED THERMOPLASTIC MATERIALS

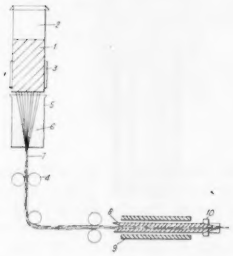
John Howard Davis, Hertford, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 26, 1972, Ser. No. 257,083

Claims priority, application Great Britain, June 10, 1971, 19889/71

Int. Cl. B29b *1/00*

U.S. Cl. 264—131 **6 Claims**



1. A process for the production of fibre reinforced thermoplastic material comprising extruding a plurality of fibres, passing the fibres into a fluidized bed of powdered thermoplastic material of lower melting point than the fibrous material, converging the fibres such that the fibres are completely drawn together to lodge the powdered material between the fibres while they are in the bed so that they form a bundle which is impregnated with the thermoplastic powder, and heating the impregnated bundle to a temperature above the melting point of the thermoplastic but below the melting point of the fibres.

3,862,288

CREEP STABILIZATION OF PLASTIC ARTICLES

Cheh-Jen Su, Alsip, Ill., assignor to Continental Can Company, New York, N.Y.

Continuation-in-part of Ser. No. 171,377, Aug. 12, 1971, abandoned. This application June 22, 1973, Ser. No. 372,556

Int. Cl. B29c *25/00*

U.S. Cl. 264—235 **6 Claims**

1. A method for imparting volume stabilization to containers for pressurized liquids the walls of which are subjected to distortion by internal pressures exerted thereon by the pressurized liquid, the method comprising

molding the container from an amorphous thermoplastic resin having a glass transition temperature T_a and comprised of (1) about 60 to about 90 percent by weight of an alpha, betaolefinically unsaturated mononitrile having the structure

$$CH_2=C(R)-CN$$

wherein R is selected from the group consisting of hydrogen, a lower alkyl group having 1 to 4 carbon atoms and a halogen and (2) about 10 to about 40 percent by weight of at least one other olefinically unsaturated monomer copolymerizable with the mononitrile, the molded container having a moisture content of less than 1 percent,

humidifying the molded container to a moisture content of at least 1 percent to effect a decrease in the glass transition temperature of the resin to a lower glass transition temperature T_b,

heating the container in the humidified state at a temperature 1° to 15°C below T_b and then

cooling the container to room temperature.

3,862,289

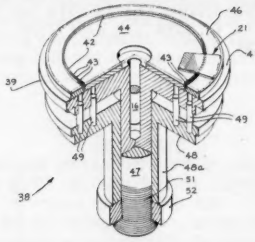
METHOD OF FORMING A MOTOR CONTROL ROTOR ELEMENT

Richard W. Currell, Santa Clara; Louis Olah, and Charles A. Vogel, both of San Jose, all of Calif., assignors to Newell Industries Inc., Sunnyvale, Calif.

Division of Ser. No. 336,616, Feb. 28, 1973, abandoned. This application Mar. 20, 1974, Ser. No. 452,729

Int. Cl. B29d *3/00*

U.S. Cl. 264—272 **1 Claim**



1. The method of forming a rotor element with a radially outer edge margin containing a continuous track of discrete openings uniformly spaced circumferentially about the rotor element and starting with a relatively thin, flat layered rotor construction having radially outwardly protruding conductive fingers each forming a connection between conductors on opposite sides of said element, comprising the steps of disposing the teeth of an annular comb element between adjacent ones of said fingers, the width of the teeth of said comb when disposed between said fingers leaving an interstice thereabout, applying a hardenable, non-conductive opaque material into said interstices, permitting said material to harden, and removing said rotor element from said teeth to leave openings formed in the radially outer edge margin.

3,862,290

METHOD FOR SHAPING CELL PROTEIN

Atsushi Yamamoto; Hiroshi Teranishi; Tadayasu Furukawa, and Takashi Matsuki, all of Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 107,462, Jan. 18, 1971, abandoned. This application Nov. 10, 1972, Ser. No. 305,272

Claims priority, application Japan, Feb. 2, 1970, 45-8440

Int. Cl. D01f *9/04*

U.S. Cl. 264—202 **11 Claims**

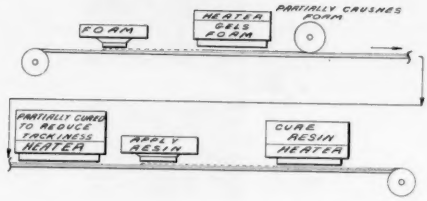
1. A process for producing yeast cell protein fibers which are substantially water-insoluble and which have a texture suitable for shaping into a food, which process comprises spinning a first aqueous solution of yeast cell protein into a

second aqueous sodium sulfate coagulating solution to form yeast cell protein fibers and contacting the protein fibers with an aqueous solution having a pH of 4 to 5, wherein (1) said aqueous solution of yeast cell protein has a pH which is more alkaline than the isoelectric point of said protein and is from 7 to 13.5 and wherein (2) said aqueous sodium sulfate coagulating solution has a pH of 6 to 10 and contains a sufficient amount of sodium sulfate to coagulate the protein and form said fibers.

3,862,291
FOAM BACKED DRAPERY FABRICS AND METHOD OF MAKING THE SAME

William A. Brandon, Jr., Burlington, and Allison Maggiolo, Greensboro, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Feb. 23, 1971, Ser. No. 118,079
Int. Cl. A47h *23/10*
U.S. Cl. 264—321 **2 Claims**



1. A process for manufacturing a foam-laminated fabric useful for draperies, slipcovers, upholsteries, tablecloths, wall-coverings and the like, comprising:

applying to one side of a textile fabric a foamed or foamable composition comprising a cross-linkable acrylic polymer and a plasticizer for said polymer,

flowing foamed polymeric composition while fluid into intimate contact with said textile fabric, and gelling the foamed polymeric composition,

compressing the foam-coated fabric to at least partially crush the gelled foam,

partially curing the fabric and at least partially-crushed foam sufficiently to reduce tackiness,

applying to the textile fabric and the gelled foam polymeric composition a cross-linkable aminoplast resin,

and thereafter heating the foam-coated textile fabric to cure said resin,

whereby said foam has increased resistance to crushing, laundering and cracking when exposed to extremely low temperatures.

3,862,292
RECOVERY OF RHENIUM

Donald J. Bauer; Dennis D. Fischer, and Roald E. Lindstrom, all of Reno, Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

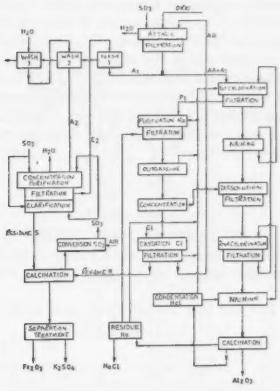
Filed Aug. 24, 1973, Ser. No. 386,792
Int. Cl. C01g *47/00*
U.S. Cl. 423—49 **8 Claims**

1. A process for recovery of rhenium from aqueous solution comprising (1) contacting the solution with an adsorbent consisting essentially of activated carbon to selectively adsorb the rhenium and (2) eluting the adsorbed rhenium from the activated carbon by means of an eluent consisting essentially of a water-soluble alcohol or a mixture of a water-soluble alcohol and water.

3,862,293
PROCESS FOR THE CONTINUOUS ACID TREATMENT OF CRUDE CLAYS AND SCHISTS

Pierre Maurel, and Pierre Duhart, both of Aix-en-Provence, France, assignors to Aluminum Pechiney, Paris, France

Filed Nov. 21, 1972, Ser. No. 308,541
Claims priority, application France, Nov. 25, 1971, 71.42250
Int. Cl. C01f *7/22, 7/26*
U.S. Cl. 423—126 **5 Claims**



1. A process for treating ores of the clay and schist type in which iron is present at least in part in the ferrous state, to recover aluminum and iron in the form of their oxides and potassium in the form of a soluble salt, comprising the steps of attacking the ore with a hot concentrated solution of sulphuric acid, separating the product of the attack into a solids portion and a liquid filtrate portion, treating the filtrate portion with hydrochloric acid and water, with cooling, to precipitate hydrated aluminum chloride, separating the precipitated hydrated aluminum chloride from the liquid phase resulting from the hydrochloric acid treatment, calcining the hydrated aluminum chloride to yield aluminum oxide, cooling the liquid phase and introducing gaseous hydrogen chloride to precipitate sodium chloride and aluminum chloride, separating the precipitated sodium chloride and aluminum chloride from the treated liquid phase to leave a filtrate, concentrating the filtrate from which the sodium chloride and aluminum chloride has been separated and introducing chlorine into the filtrate to oxidize ferrous iron present to ferric iron to bring about the formation of the insoluble double salt $Fe_2(SO_4)_3.K_2SO_4$, with the potassium present in the ore, removing the double salt, calcining the double salt to reduce the iron component to ferric oxide and the potassium component to potassium sulphate, and treating the product of calcination with aqueous medium to dissolve off the potassium sulphate from the insoluble ferric oxide.

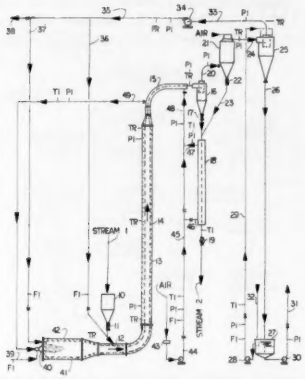
3,862,294
METHOD FOR FLASH CALCINING INORGANIC MATERIALS

Donald Spencer Engelhart, 1060 Drew St., Chicago, Ill. 60643, and Ned Henry Engelhart, 52 W. 60th St., Westmont, Ill. 60559

Filed Apr. 10, 1972, Ser. No. 242,702
Int. Cl. C01b *13/14*
U.S. Cl. 423—155 **6 Claims**

1. Method of thermal decomposition to its oxide of a solid inorganic compound in particulate form which comprises the establishing of a high temperature combustion zone by oxidizing fuel in a furnace to produce high temperature gaseous

combustion products, conducting the high temperature combustion products in a stream moving in a generally horizontal path, injecting the inorganic compound in particulate form into the stream of hot gases at a point substantially beyond the combustion zone of the furnace, then conducting the stream of gases and contained solids in an upwardly extending path, said path continuing to a point beyond the region of maximum



interaction of the solid compound and the current of heated carrying gases, then transfering heat from the stream of solid particles and carrying gases at a point beyond the maximum interaction zone to a separate stream of air moving in countercurrent to that of the said carrying gases and solid particles and conducting said last-named separate air stream into the combustion zone.

3,862,295

METHOD FOR SORPTIVE REMOVAL OF SULFUR GASES

Edward D. Tolles, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed June 30, 1972, Ser. No. 267,904

Int. Cl. C01b *17/00*; **B01j** *9/04*, *9/08*; **C01b** *17/72*

U.S. Cl. 423—244 **9 Claims**

1. A dry process for sorptively removing sulfur dioxide and sulfur trioxide from a flue gas comprising:

a. providing a flue gas containing sulfur dioxide, sulfur trioxide, oxygen, and water vapor in amounts sufficient to convert said sulfur trioxide and sulfur dioxide to sulfuric acid at a temperature between 135°F. and 500°F.;

b. passing said flue gas through a fluidized bed of unimpregnated, activated carbonaceous sorbent whereby said sulfur trioxide and sulfur dioxide are converted to sulfuric acid and sorbed onto said activated carbonaceous sorbent, and controlling the temperature rise of the exothermic reaction by adding sufficient water to said flue gas to maintain the temperature between 135 °F and no higher than the initial flue gas temperature:;

c. discharging said flue gas to the atmosphere; and

d. regenerating the sulfuric acid containing activated carbonaceous sorbent.

3,862,296

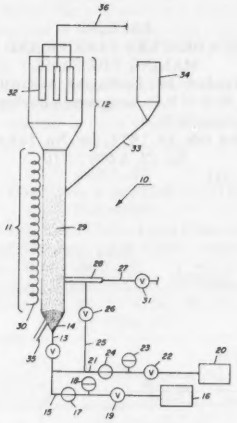
CONVERSION PROCESS FOR WASTE NITROGEN-CONTAINING COMPOUNDS

James M. Dotson, Danville, and Thomas E. Peters, Livermore, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Feb. 9, 1972, Ser. No. 224,854

Int. Cl. B01d *35/00*; **B01j** *1/22*; **C22b** *59/00*

U.S. Cl. 423—251 **23 Claims**



1. A method of converting the nitrogen portion of a nitrogen-containing compound selected from the group consisting of nitric acid, nitrons acid, nitrite salts, nitrate salts and fission product nitrates to gaseous nitrogen comprising the step of calcining the nitrogen-containing compound and a reducing agent selected from the group consisting of ammonia, ammonium compounds and mixtures thereof.

3,862,297

MANUFACTURE OF PIGMENTARY TITANIUM DIOXIDE

Maurice Arthur Claridge, Grimsby, and Richard Vyvian Pearse, Cleethorees, both of England, assignors to Laporte Industries Limited, London, England

Filed Dec. 14, 1970, Ser. No. 97,541

Claims priority, application Great Britain, Dec. 24, 1969, 62927/69

Int. Cl. C01g *23/04*, *23/08*, *23/06*

U.S. Cl. 423—615 **7 Claims**

1. In the manufacture of pigmentary titanium dioxide by a process which comprises:

a. hydrolyzing a solution of titanium sulfate to yield a precipitate of hydrous titanium dioxide;

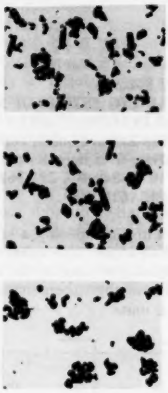
b. washing the precipitate hydrous titanium dioxide;

c. treating the washed precipitate with a treating agent selected from the group consisting of lithium; compounds of lithium; one of the group consisting of beryllium, aluminum, magnesium, zinc and compounds thereof with one of the group consisting of sodium, potassium, rubidium, caesium and compounds thereof; and mixtures thereof;

d. treating the washed precipitate with an ammonium compound; and

e. calcining the treated precipitate obtained by steps (c) and (d) above in the presence of a rutile-promoting seed and at a temperature of from 750° to 1,000°C; and wherein the treated precipitated calcined has a pH within the range of from 6 to 10 and contains from 0.02 to 0.50 percent by weight of treating agent selected from the group consisting of beryllium, aluminum, magnesium, zinc, compounds thereof and mixtures thereof (calcu-

lated as metal oxide and based on the weight of titanium dioxide), and from 0.05 to 1.0 percent by weight of treating agent selected from the group consisting of sodium, rubidium, caesium, potassium, compounds thereof and mixtures thereof (calculated as metal oxide and based on the weight of titanium dioxide), provided that any proportion of said beryllium, aluminum, magnesium, zinc, sodium, potassium, rubidium, caesium, compounds thereof and mixtures thereof required to be present in the treated precipitate calcined as hereinbefore stated, may be substituted for with an equal proportion of a compound selected from the group consisting of lithium, lithium compounds and mixtures thereof, the improvement which comprises; providing in the treated precipitated to be calcined at least 0.7 percent by weight of an ammonium compound (calculated as ammonium sulfate and based on the weight of titanium dioxide) and then expelling said ammonium compound and any decomposition product thereof from the precipitate during calcination before any substantial conversion of the titanium dioxide hydrolysate into rutile titanium dioxide takes place.



3,862,298

PROCESS FOR THE TREATMENT OF A SALT-CONTAINING ACID SOLUTION

Klaus Beltz, Budenheim (Rhine); Klaus Frankenfeld, Hunfelden-Kirberg, Taunus, and Karl Götzmann, Budenheim (Rhine), all of Germany, assignors to Chemische Fabrik Budenheim Rudolf A. Oetker, Germany

Filed Aug. 22, 1972, Ser. No. 282,752

Claims priority, application Germany, Nov. 22, 1971, 2157738

Int. Cl. C01b *25/16, 17/72*

U.S. Cl. 423—659 **10 Claims**

1. A process for treating a cation-containing acid solution, said acid solution being selected from the group consisting of sulfuric acid, phosphoric acid and mixtures thereof and constituting an effluent recovered by the regeneration of a cation exchange resin, which comprises:

a. admixing said acid solution with an organic solvent miscible in all proportions with water and acid wherein the amount of said organic acid admixed being from four to 10 times the amount of acid (calculated as 100% acid) to form thereby a solid fraction containing said cation;

b. separating said solid fraction from the resulting liquid phase; and

c. separating said organic solvent from said liquid phase.

3,862,299

TECHNETIUM-99M ALBUMIN AGGREGATES

Gerald A. Bruno, Shrewsbury; Thomas A. Haney, East Brunswick, and Puthucode N. Rajamani, North Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Continuation of Ser. No. 74,882, Sept. 23, 1970, abandoned. This application June 26, 1973, Ser. No. 373,694

Int. Cl. A61k *27/04*

U.S. Cl. 424—1 **4 Claims**

1. A process of preparing a macroaggregate composed of coprecipitated Technetium-99m sulfur colloid and denatured albumin colloid which comprises reacting a sulfur producing reagent with an acid in the presence of Technetium-99m to produce Technetium-99m sulfur colloid; adding denatured albumin thereto; adjusting the pH of the reaction solution to the isoelectric point of the denatured albumin to form aggregates of coprecipitated Technetium-99m sulfur colloid and denatured albumin; and heating the coprecipitated colloid to form uniform particle sizes of from between about 10 microns to 100 microns.

3,862,300

HISTOLOGICAL FIXATIVE

Paul T. Wertlake, Short Hills, and James S. Harrison, Ringwood, both of N.J., assignors to Applied Bioscience, Paterson, N.J.

Filed Mar. 7, 1973, Ser. No. 338,732

Int. Cl. G01n *1/28, 1/30*

U.S. Cl. 424—3 **8 Claims**

1. A histological fixative comprising an 8 to 20% wt/vol solution of a mixture of trichloroacetic acid, zinc chloride and formaldehyde wherein the weight ratio of zinc chloride to trichloroacetic acid is from about 2:1 to about 4:1 and the weight ratio of formaldehyde to trichloroacetic acid is from about 8:1 to about 10:1, in an aqueous lower alkanol wherein the volume ratio of alkanol to total water is from about 1:1 to about 1:3.

3,862,301

GLUCAGON AS A DIAGNOSTIC AID IN GASTROINTESTINAL RADIOLOGY

Stanley M. Chernish, 4403 Radnor Rd., Indianapolis, Ind. 46217, and Roscoe E. Miller, 7400 W. 88th St., Indianapolis, Ind. 46278

Filed June 18, 1973, Ser. No. 371,105

Int. Cl. A61k *27/08*

U.S. Cl. 424—4 **1 Claim**

1. The process of enhancing the visualization of the gastrointestinal tract which comprises administering to a patient 1 to 5 mg. of glucagon either intravenously or intramuscularly in conjunction with an effective amount of an X-ray contrast medium and then subjecting such treated patient to fluoroscopy or X-ray radiography.

3,862,302

PELLETIZED PREGNANCY TEST REAGENTS

Richard Thompson Price, Verona; Stuart Michael Bauer, Parsippany, both of N.J.; John Brownlee, West Seneca, N.Y., and Bastiaan Cornelis Goverde, Oss, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 808,803, March 20, 1969, Pat. No. 3,655,838. This application Oct. 4, 1971, Ser. No. 186,473

Int. Cl. F26b *5/06;* **G01n** *1/00, 33/16*

U.S. Cl. 424—12 **2 Claims**

1. A pregnancy test reagent adapted for detecting the presence of human chorionic gonadotropin in urine consisting essentially of a stable frozen and freeze-dried pellet containing a predetermined immunologically effective amount for test purposes of a dried aqueous suspension of sheep erythrocytes sensitized with human chorionic gonadotropin.

3,862,303
METHOD FOR RAPID DETECTION AND IDENTIFICATION OF SEROLOGICAL FACTORS

Norman G. Anderson, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 2, 1972, Ser. No. 223,018
Int. Cl. G01n *9/00, 31/00, 33/16*
U.S. Cl. 424—12 **4 Claims**

1. A method for rapidly detecting and identifying antigen or antibody serological factors in a suspect sample to be tested comprising:

a. coating biologically neutral polystyrene latex carrier beads with the corresponding antibody or antigen which will react with said factors, said uncoated beads being of different density than said corresponding antibody or antigen used to coat said beads, said coated beads being of different density than the corresponding antigen or antibody to be detected;

b. contacting said coated carrier beads with said suspect sample;

c. placing the contacted beads in a layer over a liquid density gradient;

d. centrifuging the layer of contacted beads and liquid density gradient until the contacted beads have banded within the liquid density gradient; and

e. examining the banding level and density of the contacted beads in said density gradient to determine whether said antigen or antibody to be detected is present in said suspect sample.

3,862,304
SUTURES HAVING LONG-LASTING GERMICIDAL PROPERTIES

Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures, Inc., Conventry, Conn.

Filed June 3, 1971, Ser. No. 149,826
Int. Cl. A61k *9/00*
U.S. Cl. 424—26 **2 Claims**

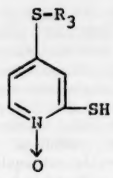
1. In a method of providing a suture of a synthetic polymer selected from the group consisting of polyolefin, polyester and polyacrylic polymers with long-lasting bactericidal properties by contacting the suture with a first aqueous solution of a cationic antibiotic and further contacting the resulting suture with a second aqueous solution of an anionic antibiotic to form a highly insoluble germicidal salt on the said suture, the improvement which comprises providing the sulture with nucleophilic groups before said treatment.

3,862,305
BACTERICIDAL, FUNGICIDAL AND DEODORIZING COMPOSITIONS CONTAINING DERIVATIVES OF PYRIDINE N-OXIDE

Claude Bouillon, Eaubonne; Gregoire Kalopissis, Paris, and Gerard Lang, Deuil-la-Barre, all of France, assignors to Societe anonyme dite: L'Oreal, Paris, France

Filed Dec. 29, 1971, Ser. No. 213,729
Claims priority, application Luxembourg, Dec. 31, 1970, 62350
Int. Cl. A61k *7/00*
U.S. Cl. 424—45 **4 Claims**

1. A composition for application to the skin or scalp, said composition having fungicidal, bactericidal and deodorizing characteristics comprising a carrier selected from the group consisting of water, a lower alkanol selected from the group consisting of ethanol isopropanol, an aqueous solution of said lower alkanol wherein said lower alkanol is present in amounts of about 20–70 percent by weight of said solution, talc and detergent: and 0.01–10 percent by weight of said composition of an active component having the formula



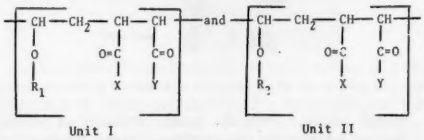
wherein R_3 is $-(CH_2)_n-COR_6$ wherein R_6 is selected from the group consisting of OH and $-O-R'_6$ wherein R'_6 is alkyl having 1–4 carbon atoms, and n is 1–10 inclusive.

3,862,306
HAIR SPRAY CONTAINING ESTERS OF MALEIC ANHYDRIDE INTERPOLYMERS

Ira Jordan Block, and Phillip Edward Sokol, both of Chicago, Ill., assignors to The Gillette Company, Boston, Mass.

Filed May 8, 1972, Ser. No. 251,362
Int. Cl. A61k *7/10*
U.S. Cl. 424—47 **16 Claims**

1. A hair spray composition comprising a solution in an alkanol having 1 to 8 carbon atoms, said solution containing from 0.05 to 20 percent by weight based on the weight of the total solution of a water-insoluble interpolymer consisting essentially of the structural units:



wherein R_1 represents an alkyl radical having from 8 to 18 atoms; wherein R_2 represents an alkyl radical having from 1 to 3 carbon atoms; and wherein X and Y each independently represent a radical selected from the group consisting of (1) an alkoxy radical having from 1 to 8 carbon atoms and (2) the hydroxy radical; the proportion of alkoxy radicals in the total number of X and Y radicals being from about 40 to about 60 percent; there being from about 0.01 to about 43 mole percent of Unit I and from about 57 to about 99.99 mole percent of Unit II in the interpolymer, based on the total number of moles of structural Units I and II in the interpolymer; and wherein said interpolymer, in the form of a 30 percent by weight solution in ethanol at 25°C. exhibits a Brookfield viscosity from about 100 cps. to about 4,000 cps. using a No. 2 spindle with a 250 cc. beaker.

3,862,307
DENTIFRICES CONTAINING A CATIONIC THERAPEUTIC AGENT AND IMPROVED SILICA ABRASIVE

David Neil Di Giulio, Cincinnati, Ohio, assignor to The Procter & Gamble Co., Cincinnati, Ohio

Filed Apr. 9, 1973, Ser. No. 349,366
Int. Cl. A61k *7/16;* **C09k** *3/00*
U.S. Cl. 424—52 **7 Claims**

1. A dentifrice composition comprising:

A. from about 10 to about 50 percent of an amorphous silica abrasive having an average particle size of from 2 to about 30 microns which has been reacted with up to 0.13 percent by weight of said composition of hydrofluoric acid at a pH of less than about pH 4;

B. an effective amount of a cationic therapeutic agent; and

C. water.

3,862,308

COMPOSITIONS FOR USE IN BODY CAVITIES AND METHOD OF USING THE SAME

Werner Schmitt; Robert Purrmann, both of Starnberg; Peter Jochum, and Wolf Dieter Zahler, both of Hechendorf, Pilsensee, all of Germany, assignors to ESPE, Fabrik Pharmazeutischer Praparate GmbH, Oberbayern, Germany

Filed Apr. 3, 1972, Ser. No. 240,855

Claims priority, application Switzerland, Apr. 8, 1971, 5180/70

Int. Cl. A61k *7/16*

U.S. Cl. 424—54 4 Claims

1. Method of washing an oral cavity to remove mucus therefrom, comprising introducing into the cavity and subsequently removing from the cavity without ingesting a composition consisting essentially of an aqueous solution of a concentration of 0.001 to 1 percent of a polymer selected from the group consisting of unsubstituted and substituted polyalkylenimines of repeating units of the formula —[$CH_2$78 CH_2—NH]— or —[CH_2—CH_2—CH_2—NH]—, said substituted polyalkylenimines substituted on at least one atom with an alyl group of 1 to 4 carbon atoms or a hydroxyalkyl group of 2 to 4 carbon atoms, copolymers of at least one of unsubstituted alkylenimines of 2 to 3 carbon atoms and said substituted alkylenimes substituted on at least one atom with an alkyl group of 1 to 4 carbon atoms or a hydroxyalkyl group of 2 to 4 carbon atoms and physiologically acceptable monobasic acid addition salts of any of the foregoing, the polymer having an average degree of polymerization of at least 6 .

3,862,309

SMOOTHING WRINKLED SKIN

David A. Krochock, Sudbury, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Dec. 20, 1971, Ser. No. 209,897

Int. Cl. A61k *7/00, 7/02;* A6l *23/00*

U.S. Cl. 424—63 7 Claims

1. A method of smoothing wrinkled human skin for as long as eight hours which includes the steps of forming over the wrinkled skin areas a layer of an aqueous solution of from about 1 to about 5 percent of sodium polystyrene sulfonate having a number-average molecular weight between about 300,000 and about 1,000,000 and permitting the layer to dry.

3,862,310

COSMETIC COMPOSITIONS CONTAINING FORMYLATED POLYETHYLENE POLYAMINE

Alan R. Quasius, Arlington Heights, Ill., assignor to The Gillette Company, Boston, Mass.

Filed Dec. 22, 1971, Ser. No. 211,115

Int. Cl. A61k *7/06*

U.S. Cl. 424—70 2 Claims

1. A cosmetic composition selected from the group consisting of a shampoo, a shave cream and a hand lotion consisting essentially of a dermatologically acceptable carrier and from 0.1 to 10 percent by weight of a water-soluble polymer consisting of polyethylene mixed polyamine-polyformamide in which from 15 to 60 percent of the total nitrogen atoms are present in the formamide groups and the remainder are present in polyethylene imine groups, the molecular weight of said polymer being from about 1,800 to about 200,000.

3,862,311

NOVEL METHOD OF ENHANCING PROGESTATIONAL ENDOME TRIAL PROLIFERATION WITH PROGESTERONE

Lewis J. Leeson, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

Division of Ser. No. 133,269, April 12, 1971, abandoned. This application Jan. 5, 1973, Ser. No. 321,184

Int. Cl. A61k *17/00*

U.S. Cl. 424—78 5 Claims

1. A method of enhancing progestational endometrial proliferation upon orally absorbing progesterone, which comprises administering to a female an effective amount of a composition comprising about 30 percent by weight of progesterone in a solid molecular dispersion molten from (a) between 35 and 90 percent of polyethyleneglycol of molecular weight 1,000 to 20,000 and (b) between 1 and 50 percent of the total weight of a polycondensate of the formula

$$HO\ (CH_2CH_2O)_a(CHCH_2O)_b(CH_2CH_2O)_cH$$
$$\quad\quad\quad

3,862,314
PROCESS FOR ISOLATING THROMBOPLASTIC MATERIAL FROM HUMAN PLACENTAE

Oswald Zwisler, Marbach near Marburg/Lahn, and Hans Joachim Biel, Marburg/Lahn, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg/Lahn, Germany

Filed Aug. 22, 1972, Ser. No. 282,719

Claims priority, application Germany, Aug. 24, 1971, 2142343

Int. Cl. A61k *17/00*

U.S. Cl. 424—105 **1 Claim**

1. A process for isolating a thromboplastic material, which process comprises grinding frozen human placentae; extracting the ground material with acetone to leave a solid residue; dissolving the solid residue in a mixture of acetone and chloroform in a volume ratio between 1:1 and 3:1; discarding undissolved matter from the resulting solution; evaporating the solution to leave a solid; extracting the solid thus obtained with heated acetone; collecting the solid material which deposits from the extract upon cooling; dissolving said solid material in chloroform; extracting the chloroform solution by shaking with water; and recovering said thromboplastic material from the water-extracted chloroform solution.

3,862,315
TETRAAMIDINO DERIVATIVES OF ANTIBIOTIC EM-49

William Lawrence Parker, Pennington, and Edward Meyers, East Brunswick, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 20, 1972, Ser. No. 307,885

Int. Cl. A61k *21/00*

U.S. Cl. 424—118 **2 Claims**

1. The tetraamidino derivative of antibiotic EM-49 or acid salts thereof, the hydrochloride having the infrared absorption spectrum as in the FIGURE, the approximate elemental analysis of anhydrous material: C, 47.60; H, 7.34; N, 21.58; Cl, 10.63; the approximate empirical formula: $C_{55}H_{93}N_{21}O_{12}Cl_4$ and an approximate molecular weight of 1384.

3,862,316
LIQUID S-METHYL N-(METHYLCARBAMOYL) OXY) THIOACETIMIDATE INSECTICIDAL COMPOSITIONS

Johnny Leroy Armstrong, Hockessin, Del., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1972, Ser. No. 317,802

Int. Cl. A01n *9/12, 9/20*

U.S. Cl. 424—173 **3 Claims**

1. An insecticidal composition having a low crystallization point comprising 20 to 30 percent by weight of S-methyl N-[(methylcarbamoyl)oxy]thioacetimidate dissolved in a solvent consisting of 80–95 percent by weight of methanol and 5–20 percent by weight of water.

3,862,317
REDUCING DEPENDENCE ON TOBACCO

Chaman Lal Anand, 47 Clarendon St., Glasgow G20 7QP, Scotland

Filed Jan. 14, 1972, Ser. No. 217,960

Claims priority, application Great Britain, Jan. 16, 1971, 2231/71

Int. Cl. A61k *27/00*

U.S. Cl. 424—195 **10 Claims**

1. A method of reducing dependence on tobacco which comprises administering orally to a person dependent thereon a sufficient amount of a tobacco dependence reducing substance extracted from a whole mature green Avena plant selected from the group consisting of *Avena sativa*, *Avena steritis*, *Avena strigosa* and *Avena fatua* to reduce said dependence, the tobacco dependence reducing substance corresponding to that obtained by solvent extraction of said Avena plant with from about 1 to 10 parts by volume of solvent per part by weight of plant, the extraction being carried out at from ambient temperature to 50°C. and said solvent being selected from the group consisting of water, ethyl alcohol, acetone, a chlorinated hydrocarbon, diethyl ether, hexane or mixtures thereof.

3,862,318
MICROBIOCIDAL NAPHTHENYL IMIDAZOLINES

Phillip Adams, Murray Hill, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 883,641, Dec. 9, 1969, Pat. No. 3,705,027. This application June 29, 1972, Ser. No. 267,607

Int. Cl. A01n *9/22*; **A61k** *7/00*

U.S. Cl. 424—200 **5 Claims**

1. A method of inhibiting the growth of bacteria or fungi in creams, lotions and shampoos subject to such growth which comprises applying to said bacteria or fungi an amount sufficient to inhibit their growth of the compound 1-aminoethyl-2-naphthenyl imidazoline or a salt thereof selected from the group consisting of the hydrochloric, sulfuric, phosphoric, acetic, lauric, oleic, gluconic, oxalic, tartaric, citric, benzoic, paratoluene, sulfonic and sulfamic acid salts.

3,862,319
BENZOTHIAZINE DIOXIDES AS ANTI-THROMOBOTIC AGENTS

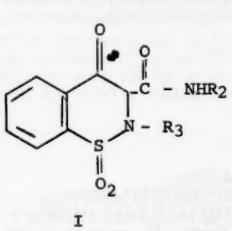
Joseph G. Lombardino, and Edward A. Wiseman, both of New London, Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 114,037, Feb. 9, 1971, abandoned, which is a continuation of Ser. No. 829,713, June 2, 1971, abandoned. This application May 21, 1973, Ser. No. 362,518

Int. Cl. A61k *27/00*

U.S. Cl. 424—246 **22 Claims**

1. A method for the treatment of thrombosis in dogs and humans which comprises the oral or intravenous administration to dogs and the oral administration to humans both in need of such treatment of an effective dose of from 1 to 50 mg per day of a compound selected from the group consisting of those of the formulae:



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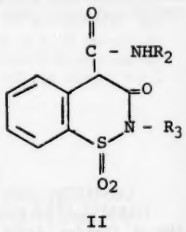


II

and the base salts thereof with pharmacologically acceptable cations, wherein R_2 is selected from the group consisting of alkyl having from one to three carbon atoms, phenyl, naphthyl, pyridyl, 3-methyl-2-pyridyl, 4-methyl-2-pyridyl, 5-methyl-2-pyridyl, 6-methyl-2-pyridyl, 5-chloro-2-pyridyl, 5-bromo-2-pyridyl, 2-pyrazinyl, 2-pyrimidyl, 4-pyrimidyl, 2-thiazolyl, 4-methyl-2-thiazolyl, 5-bromo-2-thiazolyl, 4,5-dimethyl-2-thiazolyl and mono and di-substituted phenyl wherein each substitutent is fluorine, bromine, chlorine, alkoxy having from one to three carbon atoms or trifluoromethyl; R_3 is a member selected from the group consisting of hydrogen and alkyl having from one to three carbon atoms.

3,862,320

METHODS OF PROTECTION AGAINST EMESIS IN MAMMALS BY ADMINISTRATION OF A 3-ALKOXY-THIANAPHTHENE-2-CARBOXAMIDE

Michel Leon Thominet, Paris, France, assignor to Societe D'Etudes Scientifiques et Industrielles De L'Ile-De-France, Paris, France

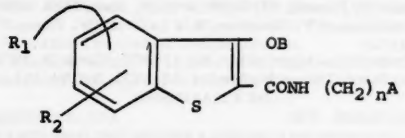
Continuation-in-part of Ser. No. 140,605, May 5, 1971, Pat. No. 3,745,175, which is a continuation-in-part of Ser. No. 845,509, July 28, 1969, abandoned. This application Apr. 5, 1973, Ser. No. 348,189

Claims priority, application France, July 29, 1968, 68.161060; Oct. 28, 1968, 68.171684

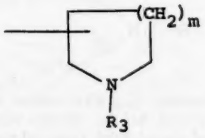
Int. Cl. A61k 27/00

U.S. Cl. 424—274 10 Claims

1. A method of protecting a mammal against emesis which comprises administering to said mammal an anti-emesis effective amount of a compound selected from the group consisting of a 3-alkoxy-thianaphthene-2-carboxamide, the dioxides thereof, the pharmaceutically acceptable acid addition salts thereof and the quaternary ammonium salts thereof, said 3-alkoxy-thianaphthene-2-carboxamide having the formula:



in which R_1 and R_2 are the same or different and are hydrogen, lower alkoxy, halogen, nitro or amino; B is lower alkyl or allyl; n is 1, 2 or 3; and A is a monovalent radical having the formula:



in which m is 1 or 2 and R_3 is lower alkyl or allyl, wherein the alkoxy and alkyl moieties each have less than five carbon atoms.

3,862,321

ACYL XYLIDIDE LOCAL ANAESTHETICS

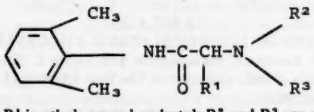
Herbert John Frederich Adams; George Herbert Kronberg, and Bertil Herbert Takman, all of Worcester, Mass., assignors to Astra Pharmaceutical Products, Inc., Worcester, Mass.

Continuation-in-part of Ser. No. 164,022, July 19, 1971, Pat. No. 3,812,147, which is a continuation-in-part of Ser. No. 100,777, Dec. 22, 1970, abandoned. This application Mar. 4, 1974, Ser. No. 447,680

Int. Cl. A61k 27/00

U.S. Cl. 424—274 16 Claims

1. A local anesthetic composition comprising (a) as its active ingredient a compound having the structural formula



wherein R^1 is ethyl, propyl or butyl; R^2 and R^3 are each separately selected from the group consisting of methyl, ethyl, propyl and butyl; R^2 together with R^3 is tetramethylene; the total sum of carbon atoms in R^1, R^2 and R^3 is at least six; or a pharmaceutically acceptable salt thereof in an effective amount sufficient to provide local anesthetic effect, together with (b) a nontoxic pharmaceutically acceptable carrier.

3,862,322

SLIME CONTROL COMPOSITIONS AND THEIR USE

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown; Paul Swered, Philadelphia, and Roger L. Justice, Cornwells Heights, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Sept. 3, 1971, Ser. No. 177,814

Int. Cl. A01n 9/12

U.S. Cl. 424—275 22 Claims

1. A method for controlling the growth of the microorganism *Aerobacter aerogenes* in an aqueous system in which said microorganism is found which comprises adding to said system so as to contact said microorganism an effective amount of a combination comprising 3,3,4,4-tetrachlorotetrahydrothiophene-1,1-dioxide and a compound selected from the group of 2,4,5 trichlorophenol, pentachlorophenol and 4-chloro-2-cyclopentylphenol, and mixtures thereof, wherein the weight ratio of the dioxide to said compound is from about 5 to 95% to about 95 to 5%.

3,862,323

DIOXIDE SLIME CONTROL COMPOSITION AND ITS USE

Robert H. Brink, Jr., Doylestown; Bernard F. Shema, Glenside, and Roger L. Justice, Cornwells Heights, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Sept. 20, 1971, Ser. No. 182,258

Int. Cl. A01n 9/12

U.S. Cl. 424—275 10 Claims

1. A method for controlling the growth of the microorganism Aerobacter aerogenes in an aqueous system in which said microorganism is found which comprises adding to said system so as to contact said microorganism an effective amount of a combination comprising 5-chloro-4-phenyl-1,2-dithiole-3-one and 3,3,4,4-tetrachlorotetrahydrothiophene-1,2-dioxide and mixtures thereof, wherein the weight ratio of the dithiole to the 3,3,4,4-tetrachlorotetrahydrothiophene-1,1-dioxide is from about 5 to 95% to about 95 to 5%.

3,862,324

THIOCYANATE SLIME CONTROL COMPOSITION AND ITS USE

Paul Swered, Philadelphia; Bernard F. Shema, Glenside, and Robert H. Brink, Jr., Doylestown, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Sept. 20, 1971, Ser. No. 182,257

Int. Cl. A01n 9/02

U.S. Cl. 424—277 10 Claims

1. A method for controlling the growth of the microorganism *Aerobacter aerogenes* in an aqueous system in which said microorganism is found which comprises adding to said system so as to contact said microorganism an effective amount of a combination comprising 5-chloro-4-phenyl-1,2-dithiole-3-one and methylene bisthiocyanate and mixtures thereof, wherein the weight ratio of the dithiole to the bisthiocyanate is from about 5 to about 95% to about 95 to 5%.

3,862,325

METHOD OF COMBATING PLANT FUNGI

Richard Edward Plowman, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 1, 1972, Ser. No. 285,624

Claims priority, application Great Britain, Sept. 15, 1971, 42940/71

Int. Cl. H01n 9/28

U.S. Cl. 424—283 5 Claims

1. A method of combating fungal diseases of plants which comprises applying a fungistatic amount of 4H-5,6-dihydropyran-3-carboxylic acid to plant seeds or to the soil for said plants.

3,862,326

PROTECTING MATERIAL'S WITH ORGANO-BISMUTH COMPOUNDS

Frank J. Gross, Union County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 193,004, May 7, 1962, abandoned, which is a continuation-in-part of Ser. No. 120,508, June 29, 1961, abandoned. This application Sept. 7, 1965, Ser. No. 485,581

Int. Cl. A01n 9/12; A61l 13/00; A01n 9/24, 9/00

U.S. Cl. 424—296 9 Claims

1. A method for protecting a medium susceptible to attack by fungi and bacteria which comprises applying to the locus to be protected an effective amount of a bismuth compound selected from the group consisting of R'_3BiX_2 and $RnBiX_{3-n}$, wherein n is 1 to 2, X is selected from the group consisting of halogen, oxygen, carboxylate, phenoxide and mercaptide and R' and R are aryl.

3,862,327

SUBSTITUTED PHENYLETHYL SULFITES USEFUL FOR CONTROLLING MITES

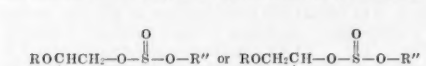
Rupert A. Covey, Wolcott; Allen E. Smith, Bethany, and Winchester L. Hubbard, Woodbridge, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 685,226, Nov. 1, 1967, Pat. No. 3,775,958. This application June 28, 1973, Ser. No. 374,297

Int. Cl. A01n 9/14

U.S. Cl. 424—303 2 Claims

1. A miticidal composition comprising a miticidally effective amount of a compound represented by the formula



in which R is alkyl containing up to 18 carbon atoms, phenyl, phenyl having substituents consisting of up to 5 halo radicals selected from the group consisting of chloro and bromo, or mono-substituted phenyl wherein the substituent is an alkyl group having up to 9 carbon atoms; R' is phenyl, phenyl having substituents consisting of up to 5 halo radicals selected from the group consisting of chloro and bromo, or mono-substituted phenyl wherein the substituent is an alkyl group having up to 9 carbon atoms; and R'' is alkyl or haloalkyl having up to 18 carbon atoms, alkenyl, alkynyl having from 3 to 10 carbon atoms, cyclohexyl, phenyl, phenyl having substituents consisting of up to 5 halo radicals selected from the group consisting of chloro and bromo, or mono-substituted phenyl wherein the substituent is an alkyl group having up to 9 carbon atoms; and a surface-active dispersing agent.

3,862,328

SALTS OF 1-[0-[(3-DIMETHYLAMINOPROPYL)-THIO]PHENY]-3-ETHYLUREA WITH COMPLEX ORGANIC ACIDS

John Krapcho, Somerset, N.J., assignor to E. R.. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 46,520, June 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 760,072, Sept. 16, 1968, abandoned. This application Jan. 25, 1972, Ser. No. 220,700

Int. Cl. A61k 27/00

U.S. Cl. 424—315 7 Claims

1. A composition for the relief of cardiac arrhythmias comprising about 250 to 500 mg per dosage unit of a pharmaceutically acceptable organic acid salt of 1-[o-[(3-dimethylaminopropyl)thio]phenyl]-3-methylurea and a pharmaceutically acceptable carrier therefor.

3,862,329

PROPIONIC ACID FOR TREATING HYPERTENSION

Kurt Eichenberger, Therwil, and Christian Egli, Magden/Aargau, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 129,639, March 30, 1971, abandoned. This application May 7, 1973, Ser. No. 357,971

Claims priority, application Switzerland, Apr. 9, 1970, 5273/70; July 16, 1970, 10819/70; Mar. 9, 1971, 3415/71

Int. Cl. A61k 27/00

U.S. Cl. 424—319 2 Claims

2. A method for treating hypertension comprising the oral administration to animals of an anti-hypertensive effective amount of (+)-β-amino-(3,4-dimethoxyphenyl)-propionic acid or a therapeutically usable salt thereof with a solid pharmaceutical excipient.

3,862,330

N-(C_8-C_{12} ALKYL) DIARALKYLAMINES USED TO COMBAT PLANT FUNGI

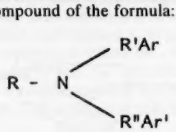
Robert P. Johnson, 901 North State St., Alma, Mich. 48801, and Kenneth P. Dorschner, 2612 Lakevale Dr., Vienna, Va. 22180

Continuation-in-part of Ser. No. 125,877, March 18, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 314,140

Int. Cl. A01n 9/20

U.S. Cl. 424—330 3 Claims

1. A process for protecting a growing plant from attack by pathogenic fungi which comprises contacting said plant with an anti-fungally effective amount of about 20 to 2,500 parts per million of a compound of the formula:



Where R is a branched C_{8-12} alkyl radical; R' and R'' are methylene and Ar and Ar' are radicals selected from the group consisting of phenyl, tolyl, xylyl and naphthyl.

3,862,331

PROCESS FOR TREATING THE SKIN FOR RELIEVING SYMPTOMS CAUSED BY POISON IVY AND POISON OAK

Ely J. Crary, 437 St. Mary's Ln., Marietta, Ga. 30060

Filed Apr. 13, 1973, Ser. No. 350,702

Int. Cl. A61k 27/00

U.S. Cl. 424—331 4 Claims

1. A process of treating poison ivy and poison oak on a person suffering therefrom comprising applying topically to the affected skin of said person an effective amount of 2-butanone.

3,862,332

METHOD OF LOWERING SERUM CHOLESTEROL

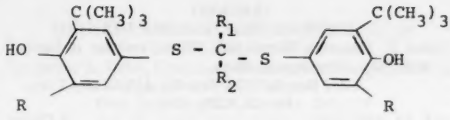
James W. Barnhart, Indianapolis, and Philip J. Shea, Zionsville, both of Ind., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 637,635, May 11, 1967, abandoned. This application Nov. 19, 1969, Ser. No. 878,256

Int. Cl. A61k 27/00

U.S. Cl. 424—337 16 Claims

1. A method for lowering serum cholesterol levels in animals comprising administering to an animal a hypocholesteremic amount of a compound corresponding to the formula



wherein R in each occurrence thereof independently represents loweralkyl of from one to four carbon atoms, inclusive, R_1 represents methyl, and R_2 represents methyl or ethyl.

3,862,333

METHODS AND COMPOSITIONS FOR INHIBITING RUMEN MICROBIAL DEAMINATION

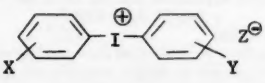
William V. Chalupa, Malvern; Alfred W. Chow, Radnor, and Roger C. Parish, King of Prussia, all of Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 344,373, March 23, 1973, abandoned. This application Mar. 27, 1974, Ser. No. 455,169

Int. Cl. A61k *27/00*

U.S. Cl. 424—353 18 Claims

1. The method of inhibiting microbial deamination of amino acids in the rumen of animals without having a significant adverse effect on the overall fermentation of the rumen comprising administering orally to ruminant animals a quantity of an active ingredient effective but nontoxic to the animal, said ingredient having the formula:



in which

Z is an anion derived from a nontoxic, pharmaceutically acceptable inorganic or organic acid; and

X and Y are respectively hydrogen, methyl, ethyl, halo, trifluoromethyl, methoxy, ethoxy, amino, acetamido, nitro, carboxy, cyano, or when both X and Y are taken together in the 2,2′-position, sulfur, oxygen or $(CH_2)_p$ in which p is an integer from 0–3.

3,862,334

METHOD OF MANUFACTURING CARBON FIBRES

William N. Turner, Mickleover, England, assignor to Secretary of State for Defense, London, England

Filed June 4, 1969, Ser. No. 830,534

Claims priority, application Great Britain, June 4, 1968, 26422/68

Int. Cl. C01b *31/07*

U.S. Cl. 423—447 5 Claims

1. A method of manufacturing a carbon fibre comprising the subsequent steps of firstly heating a polyacrylonitrile fibre in an inert atmosphere to a temperature in the range of 200° to 300°C during which time an exothermic reaction takes place, secondly heating the fibre in an oxygen containing atmosphere to a temperature in the range 150° to 250°C during which time an additional exothermic reaction takes place, and subsequently pyrolysing the fibre.

3,862,335

PROCESS FOR PRODUCING SULFUR FROM A GAS CONTAINING HYDROGEN SULFIDE AND SULFUR DIOXIDE

Philippe Renault, Noisy-le-Roi; Andre Deschamps, Chatou, and Claude Dezael, Maisons-Laffitte, all of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison, France

Filed Apr. 3, 1973, Ser. No. 347,540

Claims priority, application France, Apr. 10, 1972, 72.12566

Int. Cl. C01b *17/04*

U.S. Cl. 423—575 11 Claims

1. In a process for producing sulfur from a gas containing hydrogen sulfide and sulfur dioxide, wherein the gas in contacted with an organic liquid in a contact zone forming molten sulfur in the contact zone; and a mixture of molten sulfur droplets in the organic liquid are passed to a sulfur settling zone substantially distinct from said contact zone, the improvement comprising:

introducing a member of the group consisting of ammonia and ammonium sulfide into the settling zone for facilitating coalescense of said molten sulfur droplets whereby the separation of said molten sulfur and said organic liquid is made sharper.

3,862,336

ANIMAL FOOD AND METHOD OF MAKING THE SAME

Melvin Kofsky, Roslyn, and Isidore Klebanow, Great Neck, both of N.Y., assignors to Super Bowl Pet Foods, Inc., Maspeth, N.Y.

Continuation-in-part of Ser. No. 517,449, Dec. 29, 1965, abandoned. This application Apr. 15, 1970, Ser. No. 28,927

Int. Cl. A23k *1/00*

U.S. Cl. 426—1 12 Claims

1. A microbiologically stable, substantially neutral, nutritionally balanced semi-plastic non-pasteurized, uncooked animal food composition which consists essentially of

1. a dried proteinaceous food substance,
2. an aqueous matrix including a water soluble colloidal binding and gelling agent selected from the group consisting of gelatin or water soluble gum, the amount of said gum or gelatin ranging from about ½ to about 10 percent by weight, and
3. a water soluble, low molecular weight solid, liquid or mixture thereof in an amount sufficient to increase the osmotic pressure of the water in which it is dissolved thereby providing a bacteriostatic effect,

the moisture content of the food composition ranging from about 15 percent to not greater than 25 percent, all percents by weight being based upon the weight of the total composition.

3,862,337

FEED COMPOSITION

Jaime Melgarejo Osborne, Avda. Republica Argentina 5, Sevilla, Spain

Continuation-in-part of Ser. No. 26,396, April 7, 1970, abandoned. This application Mar. 9, 1973, Ser. No. 339,955

Claims priority, application Spain, May 14, 1969, 367258

Int. Cl. A23k *1/06*

U.S. Cl. 426—2 7 Claims

1. An aminal feed comprising a product produced by the process which consists essentially of collecting a yeast suspension from the fermentation or ripening of beer, said suspension containing 12–15% yeast and up to 3% ethyl alcohol adding to said suspension sodium chloride until the concentration of sodium chloride is 3.5 to 5%, and maintaining said suspension at 32° to 36° for a period of time sufficient to destroy harmful microorganisms in said suspension and to autolyze but not heterolyze the yeast.

3,862,338

CAST CHEWING GUM PRODUCT AND METHOD OF MAKING THE SAME

Melvin L. Sapsowitz, Clarks Summit, Pa., assignor to Topps Chewing Gum, Incorporated, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 170,634, Aug. 10, 1971, abandoned. This application Oct. 3, 1973, Ser. No. 403,152
Int. Cl. A23g *3/30, 3/00*
U.S. Cl. 426—3 3 Claims

1. A method of making a cast chewing gum product which includes the steps of preparing a chewing gum formulation comprising gum base, flavoring and an added sugar component, at least about 50 percent by weight of said added sugar component comprising dextrose and sucrose, the amount of dextrose in said added sugar component being at least about 6 percent of the total sugar content, intimately mixing said ingredients, heating said formulation to a temperature above about 70°C and not exceeding about 100°C, thereby to liquefy said formulation, thereafter depositing said heated liquid formulation into shaping cavities, and thereafter cooling said liquid material in said cavities.

3,862,339

PROCESS FSR MAKING RECTILINEAR BREAD LOAVES

John J. Balboni, Tarrytown, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,720
Int. Cl. A21d *8/06*
U.S. Cl. 426—19 4 Claims

1. Process for baking bread which comprises semi-proofing a yeast-raised aqueous bread dough in a bakery pan whose side walls have an upward and outward taper and are bowed convexly intermediate their upper and lower extremities and whose sides form the locus of a plane having an acute angle less than 2.5° but more than 1.5° relative to a vertical plane intersecting same, baking the dough and de-panning it, the de-panned hot loaf being of a rectilinear cross-section whose crust panels have an arc radius corresponding to that of the bowed section of the pan's side walls, the semi-proofed condition being such that but for termination of the proofing step a volume increase above about 10% but less than 50% of the semi-proofed dough volume would be achieved if proofing were allowed to continue, and cooling the loaf under ambient conditions to allow it to shrink to a rigid crust having straight sides.

3,862,340

FLAVORING WITH 5-PHENYL PENTENALS

William Lewis Schreiber, Jackson, N.J.; Gerard Joseph Mosciano, Newton, Pa.; Alan O. Pittet, Atlantic Highlands, N.J.; Manfred Vock, Locust, N.J., and Edward Joseph Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 25, 1972, Ser. No. 283,632
Int. Cl. A23l *1/26*
U.S. Cl. 426—65 6 Claims

1. A process for altering the organoleptic properties of an edible material selected from the group consisting of foodstuffs and beverages which comprises adding to said edible material a 5-phenyl pentenal selected from the group consisting of 5-phenyl-4-pentenal and 5-phenyl-2-pentenal in a small but effective amount to impart to said edible material a grapefruit flavor.

3,862,341

BROWNIE FROSTING DRY MIX

James H. Johannes, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Dec. 3, 1973, Ser. No. 420,822
Int. Cl. A23g *1/00*
U.S. Cl. 426—162 3 Claims

1. A dry frosting mix consisting essentially of:
about 68 to 75 percent sucrose by weight of the frosting dry mix composition,
about 10 to 16 percent cocoa by weight of the frosting dry mix composition, and
about 9 to 13 percent plastic shortening by weight of the dry mix composition, said plastic shortening having a solid fat index of about:

Temperature, °F.	SFI,%
50	29–33
70	21–24
80	19–22
92	14–17
104	8–10.

3,862,342

HIGH PROTEIN CITRUS FOOD PRODUCTS

Matthew D. Maraulja, Lakeland; John A. Attaway, and Cedric D. Atkins, both of Winter Haven, all of Fla., assignors to State of Florida, Department of Citrus, Lakeland, Fla.

Continuation-in-part of Ser. No. 14,672, Feb. 26, 1970, abandoned. This application Jan. 30, 1973, Ser. No. 328,073
Int. Cl. A23c *23/00*
U.S. Cl. 426—185 17 Claims

1. A stable, high protein citrus food product comprising at least about 50 percent by weight, based on the total weight of the composition, of full strength citrus juice or the equivalent thereof in citrus solids, about 1–6 percent by weight of glycoprotein material soluble at a pH of about 2–4, about 0.5 – 3.0 percent by weight starch which has been solubilized and partially hydrolyzed by heating in water at a temperature of about 210° – 260° F. for about 10–15 minutes, and about 0.1 – 1.0 percent by weight of a soluble food stabilizer.

3,862,343

EDIBLE COMPOSITIONS HAVING A POULTRY MEAT FLAVOR AND PROCESSES FOR MAKING SAME

Karel Willem Breuking, Hilversum; Andries Van Delft, Nieuw Loosdrecht, both of Netherlands, and Christopher Giacino, Califon, N.J., assignors to International Flavors and Fragrances Inc., New York, N.Y.

Filed Nov. 8, 1972, Ser. No. 304,806
Int. Cl. A23l *1/26*
U.S. Cl. 426—211 4 Claims

1. A process for preparing an edible meatless poultry meat flavored composition comprising the steps of (A) intimately admixing in the absence of any natural meat or poultry meat products (i) powdered chicken egg yolk; (ii) L-cysteine hydrochloride and (iii) thiamine hydrochloride said powered chicken egg yolk, L-cysteine hydrochloride and thiamine hydrochloride being present in amounts sufficient to produce a poultry flavor, and (B) heating the resulting mixture at a temperature and for a period of time whereby a poultry meat flavored product is produced.

3,862,344
METHOD OF DIELECTRICALLY SEALING IN SANDWICH MAKING

Frederick A. Zobel, Croton-on-Hudson, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

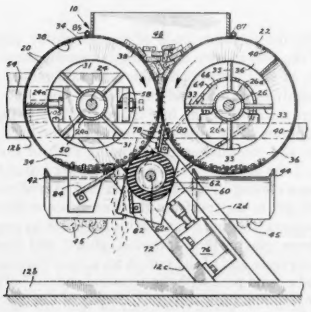
Filed Dec. 11, 1972, Ser. No. 313,727
Int. Cl. A21d *13/00*; A23l *1/34*, *3/32*
U.S. Cl. 426—244 6 Claims

1. The method of dielectric sealing superposed bread slices and an intermediate filling to form a unitized composite adapted to be toasted which comprises depositing a heat activatable hydrophillic colloidal sealing coating adhesively active in the presence of water in a pattern onto the perimeter of a first bread slice, locating a filling composition on said slice within said pattern and in spaced relation thereto, depositing a second bread slice on the first slice, and sequentially applying a plurality of dielectric heating impulses to the sealing perimeter defined by said sealing coating to provide localized heat diffusion thereto and cause graudal moisture evaporation in the vicinity of said coating.

3,862,345
PROCESS FOR REMOVING THE PEELS FROM COOKED MASHED POTATOES WHICH MAY SUBSEQUENTLY BE DEHYDRATED

Jack D. Westover, Burnsville, and Elmars M. Kiploks, Minneapolis, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 17,443, March 9, 1970, abandoned. This application Oct. 11, 1973, Ser. No. 405,337
Int. Cl. A23b *7/03*; A23l *1/12*
U.S. Cl. 426—262 6 Claims



1. A process for preparing a dehydrated potato product wherein the potatoes are peeled with a pair of cylindrical pressing drums mounted in parallel tangentially adjacent relationship, both of the pressing drums having openings therein, said process comprising placing pieces of cooked potato having peel on them between the pressing drum, rotating both of the drums with the rotation of one of the drums being at a higher surface speed than the other to provide a shearing action for severing the ligaments of edible potato that extend through the openings from the adjacent peeling thereby forcing cooked edible portions of the potato, except the peel, through the openings in the drums and retaining the peelings on the surface of the drums, whereby the speed differential provided by the different surface speeds of the drums is adapted to increase the yield of the process by removing an additional fraction of the potato from the peel and thereafter drying the mashed potato by exposing the potato mash to a drying medium to obtain a non-pasty dehydrated potato.

3,862,346
THIN FILM DEFLUORINATION OF PHOSPHATE ROCK

Clinton Allen Hollingsworth, Lakeland, Fla., assignor to Borden, Inc., Columbus, Ohio

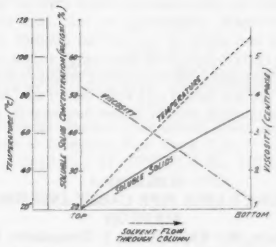
Continuation-in-part of Ser. No. 179,523, Sept. 10, 1971, , which is a continuation-in-part of Ser. No. 757,413, Sept. 4, 1968, Pat. No. 3,617,242. This application Mar. 21, 1974, Ser. No. 453,296
Int. Cl. C05b *13/00*
U.S. Cl. 426—381 17 Claims

1. Process for defluorinating phosphate rock feed by thin-film technique comprising initially introducing to a fluid bed reactor seed particles of −¼ inch to +35 mesh (Tyler Standard); introducing fluidizing gases into the reactor to establish a fluidized bed of the seed particles; gradually introducing the phosphate rock feed finer than about 35 mesh at a point below the top of the fluidized bed until operating conditions are stabilized; continue introducing into the fluid bed reactor phosphate rock feed and the fluidizing gas in order to establish a fluidized bed containing seed particles at least some of which are coated with a thin film of the phosphate rock feed; maintaining the fluidized bed at a sufficient temperature to remove at least 75 percent of the fluorine in the phosphate rock feed; and removing a defluorinated phosphate product from the fluid bed reactor.

3,862,347
SOLID-LIQUID PACKED BED EXTRACTION

Henricus A. Thijssen, North Brabant, Netherlands, assignor to General Foods Corporation, White Plains, N.Y.

Filed June 30, 1972, Ser. No. 267,883
Int. Cl. A23f *1/08*; B01d *11/02*
U.S. Cl. 426—434 8 Claims



1. In a multi-stage batch-countercurrent method of solvent extraction of soluble constituents from solid particles compacted into stationary porous packed beds, the improvement which comprises, extracting a portion of the soluble constituents from the freshly charged solid particles in the last stage of the multi-stage system at operating conditions which cause a temperature gradient increasing in the direction of flow of the extracting fluid to cause the extracting fluid, containing solutes extracted from solid particles in prior stages, to decrease in viscosity as said extracting fluid passes through the freshly charged stationary porous packed bed of solid particles and solubilizes a portion of the soluble constituents therein.

3,862,348

APPARATUS FOR CRUCIBLE-FREE ZONE MELTING

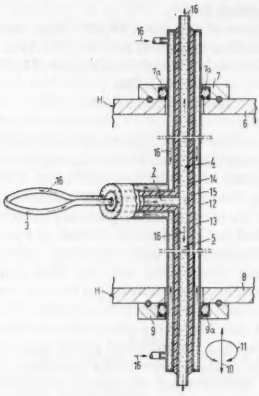
Wolfgang Keller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed Nov. 15, 1973, Ser. No. 415,976

Claims priority, application Germany, Nov. 21, 1972, 2257087

Int. Cl. F27d *11/06*; H05b *9/02*

U.S. Cl. 13—26 4 Claims



1. In an apparatus for crucible-free zone melt treatment of a semiconductor rod which includes a hollow housing having support means at opposite walls thereof for positioning a semiconductor rod within said housing, an induction heating coil disposed within said housing so as to annularly encompass a zone on a semiconductor rod positioned between said support means and a movable energy transmission means interconnecting said coil with an energy source outside said housing, said transmission means comprising coaxially mounted hollow conductive tube members which support said coil,

the improvement comprising in that said transmission means is composed of two partial conduit sections for dividing current flow from said energy source to said coil, said partial conduit sections being arranged so that a first conduit section passes upwardly out of said housing and a second conduit section passes downwardly out of said housing.

3,862,349

TELEPHONE CABLE PIPE CABLE ASSEMBLY AND METHOD

James R. Watts, Box 83, R.R. No. 3, Owensboro, Ky. 42301

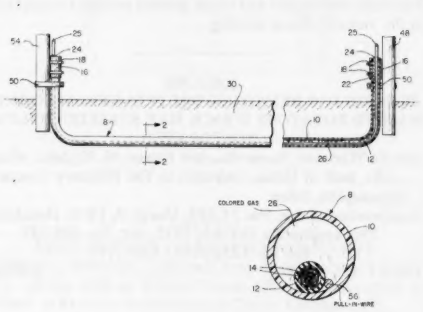
Continuation of Ser. No. 297,064, Oct. 12, 1972, abandoned. This application Nov. 2, 1973, Ser. No. 412,247

Int. Cl. H02g *9/06*, *1/08*; H01b *7/32*

U.S. Cl. 174—11 R 4 Claims

1. As an article of manufacture, a telephone cable pipe cable for underground installation comprising an outer protective sheath in the form of a flexible plastic pipe of finite length, a conventional telephone cable inside of said pipe, the inside diameter of said pipe being sufficiently greater than the outside diameter of said telephone cable to permit the placement in said pipe after underground installation thereof of at least one additional telephone cable, a pull-in wire inside said pipe, substantially paralleling said telephone cable, for pulling an additional telephone cable into said pipe, means closing and sealing each end of said pipe with the terminal ends of the telephone cable and the ends of the pull-in wire extending outwardly thereof, the end portions of said telephone cable and said pull-in wire being fixed relative to the end portions of said pipe, and a gas under pressure filling the free space within said pipe, the means for closing and sealing each end of said pipe also preventing the escape of said gas from within the pipe.

4. A method of providing an underground installation of telephone cable wherein an additional cable is installed after underground installation of a first cable comprising the steps of manufacturing a finite length of telephone cable pipe cable comprising an outer protective sheath in the form of a flexible plastic pipe, a first conventional telephone cable inside of said pipe, the inside diameter of said pipe being sufficiently greater than the outside diameter of said telephone cable to permit the placement in said pipe of an additional telephone cable, a pull-in wire inside said pipe, substantially paralleling said telephone cable, means closing and sealing each end of said



pipe with the terminal ends of the telephone cable and the ends of the pull-in wire extending outwardly thereof, the end portions of said telephone cable and said pull-in wire being fixed relatively to the end portions of said pipe, and a gas under pressure filling the free space within said pipe; burying said telephone cable pipe cable in the ground with the ends of the pipe and the outwardly extending ends of the telephone cable and the pull-in wire positioned above ground; removing the means closing and sealing each end of said pipe, permitting said gas to escape from the free space within said pipe, and attaching one end of an additional cable to one end of the pull-in wire; placing the additional cable in said pipe by pulling on the opposite end of the pull-in wire; reclosing and resealing each end of said pipe with the terminal ends of both telephone cables extending outwardly of the ends of the pipe; and refilling the free space within said pipe with gas under pressure.

3,862,350

RADIO FREQUENCY INTERFERENCE SHIELDING

Bernard S. Milosavich, Baltimore, Md., assignor to The Singer Company, Inc., New York, N.Y.

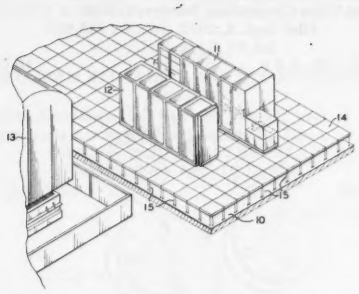
Filed Oct. 3, 1973, Ser. No. 402,999

Int. Cl. H05k *9/00*

U.S. Cl. 174—35 R 5 Claims

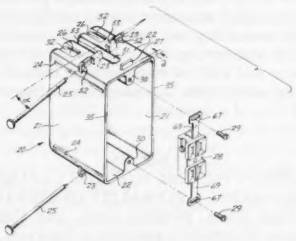
1. Apparatus providing electromagnetic interference protection to electrical equipment, said apparatus comprising an electrically conductive supporting platform which supports said electrical equipment thereon, means holding said supporting platform in spaced relation from a base, means interconnecting separate components of said electrical equipment, said interconnecting means passing between said base and said supporting platform, a sheet of conductive material interposed

between said base and said supporting platform completely surrounding the space therebetween, and means electrically



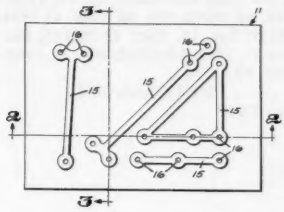
connecting said sheet, said supporting platform and said electrical equipment together.

3,862,351
MOLDED ELECTRICAL JUNCTION BOX
Edgar C. Schindler, and John C. McEachron, both of Puyallup, Wash., assignors to Nelco Corporation, Kent, Wash.
Continuation of Ser. No. 265,300, June 22, 1972, abandoned, which is a division of Ser. No. 69,266, Sept. 3, 1970, Pat. No. 3,701,451. This application Feb. 21, 1974, Ser. No. 444,617
Int. Cl. H02g *3/12*
U.S. Cl. 174—58 **39 Claims**



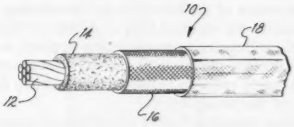
1. An electrical junction box having inter-connected front-to-rear walls, a first front to rear wall having means thereon to provide a planar abutment surface, a second front-to-rear wall extending laterally from said first wall, the respective front edges of said first and second walls being co-planar, fastener retaining means positioned diagonally on said second wall, the axis of said fastener retaining means being spaced apart from the surface of said second wall in non-intersecting relationship throughout the surface area of said second wall, said fastener retaining means including a first elongated guideway to hold a fastening nail therein against movement out of axial alignment therewith, an extension of the axis of said guideway diagonally intersecting the plane of said planar abutment surface of said first wall at an intersection point substantially inward from both the front and rear edges of said planar abutment surface, a first segment of said planar abutment surface lying forward from said intersection point toward said front edge, a second segment of said planar abutment surface lying rearward from said intersection point toward said rear edge, said first segment being adapted to provide lateral thrust against a structural member to which said junction box is fastened to prevent pivotal movement of said box around said intersection point when urged in one direction of rotation, said second segment being adapted to provide lateral thrust against said structural member to prevent pivotal movement of said box around said intersection point when urged in the opposite direction of rotation, said junction box being thereby securable to a structural member against rotational, axial, radial and transverse movement by a single fastening nail.

3,862,352
PHOTOGRAPHICALLY PREPARED ELECTRICAL CIRCUITS WHEREIN THE PHOTOSENSITIVE MATERIAL IS A PHOTOCONDUCTOR
Elliot Berman, Quincy, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Apr. 16, 1968, Ser. No. 721,778
Int. Cl. H05k *1/00;* **G03c** *5/00;* **H02b** *1/04*
U.S. Cl. 174—68.5 **10 Claims**



1. A process for making electrical circuits comprising the steps of exposing a medium comprising a layer of photoconductive titanium dioxide which becomes reversibly activated upon exposure, thereby becoming capable of causing chemical reactions in exposed portions and thereby forming an image of an electrical circuit on said layer of photoconductive material, and contacting said image with a developer substance which undergoes an oxidation/reduction type reaction upon contact with the exposed activated photoconductive material and that deposits thereon an electrically conductive metal layer and including the step of forming receptacles adapted to receive electrical components suitable for connection in said circuit.

3,862,353
HIGH TEMPERATURE ASBESTOS INSULATED ELECTRICAL CONDUCTOR, AND METHOD OF MAKING SAME
Charles Gotwalt Morton, Chelmsford, Mass., assignor to General Electric Company, New York, N.Y.
Filed Dec. 21, 1973, Ser. No. 427,356
Int. Cl. H01b *7/02*
U.S. Cl. 174—121 SR **10 Claims**



1. A high temperature resistant, insulated electrical conductor, comprising:
   a. an electrical conductor;
   b. a body of asbestos fiber surrounding the electrical conductor;
   c. an enclosing fabric comprising refractory fibers embracing the body of asbestos fiber and being adhered to said body of asbestos fiber with a fused thermoplastic of at least one polymeric material selected from the group consisting of polyester and polyamide; and

d. a covering of a fused in situ thermoplastic film of at least one polymeric material selected from the group consisting of polyester and polyamide.

3,862,354

TUNING INDICATION CIRCUIT "OPERATING DEVICE" FOR TELEVISION RECEIVERS

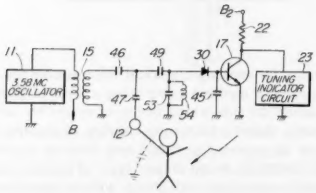
Yukio Kawamata, Ibaragi; Keisuke Yamamoto, Hirakata, and Toshimitsu Fujimori, Ibaragi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 186,755, Oct. 5, 1971, which is a continuation of Ser. No. 850,887, Aug. 18, 1969, abandoned. This application June 4, 1973, Ser. No. 366,512

Claims priority, application Japan, Aug. 22, 1968, 43-60652; Oct. 24, 1968, 43-77485; Nov. 13, 1968, 43-84110; Feb. 27, 1969, 44-15992; Oct. 30, 1968, 43-95346; Oct. 30, 1968, 43-95347; Nov. 18, 1968, 43-101205; Dec. 26, 1968, 43-1001; Feb. 27, 1969, 44-18912; May 23, 1969, 44-49145; June 25, 1969, 44-61370

Int. Cl. H04n *5/50*

U.S. Cl. 178—5.8 R **3 Claims**



1. A tuning indication operating device for use in a television receiver, said television receiver having a manually operated tuning knob for adjusting the tuning condition of the receiver, a high frequency signal generating source having an output terminal, and a tuning indicator, said tuning indication operating device comprising

a rectifier diode having one terminal connected to the output terminal of said high frequency generating source,

a contactor element formed as a part of said tuning knob and connected to the other terminal of said rectifier diode, wherein when the tuning knob is touched with a hand, the capacitance of the human body is added between said contactor element and the ground,

a resistor connected between the other terminal of said rectifier diode and the ground, said resistor and said capacitance of the human body constituting a smoothing circuit for the rectified output of said rectifier diode, only a DC voltage component being applied to the human body thereby preventing a spurious electromagnetic wave from being radiated from the human body during operation of the tuning knob,

a blocking capacitor having one electrode connected to the other terminal of said rectifier diode,

a detector diode having one terminal connected to the other electrode of said blocking capacitor,

a capacitor connected between the other terminal of said detector diode and the ground, and

a switching transistor having the base connected to the other terminal of said detector diode and having the emitter and collector connected to the ground and a DC power source respectively, said switching transistor being connected in parallel with said tuning indicator thereby to effect supply of the DC power source to said tuning indicator only when said switching transistor is turned off.

3,862,355

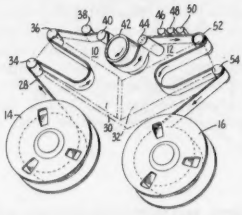
HELICAL SCAN WIDE BAND TAPE RECORDER APPARATUS AND METHOD

Barrett Earl Guisinger, Saratoga, Calif., assignor to International Video Corporation, Sunnyvale, Calif.

Filed Sept. 1, 1972, Ser. No. 285,922

Int. Cl. G11b *15/52, 5/04*

U.S. Cl. 178—6.6 P **18 Claims**



1. Apparatus for recording a television signal having a plurality of fields each including a plurality of horizontal lines as a plurality of tracks on a width of magnetic tape comprising:

means receiving said television signal for providing a carrier signal having an instantaneous frequency deviating from about 9 to 12 MHz modulated in accordance with said television signal,

helical scanner assembly means including a rotating member carrying at least two video recording heads,

means for applying said modulated carrier signal to said recording heads,

means for transporting said magnetic tape past said scanner assembly means in an omega wrap configuration and,

means for controlling said helical scanner assembly means and said transporting means to record said plurality of tracks on said width of magnetic tape, each of said tracks carrying substantially a predetermined fraction of horizontal lines of a complete video field.

3,862,356

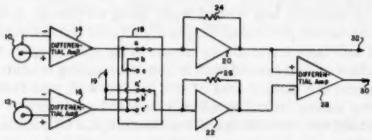
TELEVISION PICTURE MONITOR CAPABLE OF MEASURING A PLURALITY OF SIGNALS

Ronald Arthur Olson, Portland, Oreg., and Gerrit Luten, Heerenveen, Netherlands, assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 7, 1972, Ser. No. 216,001

Int. Cl. H04n *7/02*

U.S. Cl. 178—6.8 **7 Claims**



1. In a television picture monitor apparatus for monitoring input television signals continuously in the real time domain:

a plurality of input means, each of which includes at least a pair of terminal means for receiving the input television signals;

differential amplifier means connected to said terminal means for linearly amplifying said input television signals received thereby;

switching means connected to said differential amplifier means for selecting either one or all of said linearly amplified input television signals; and

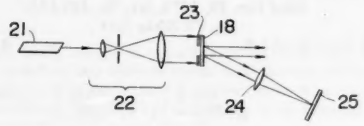
linear output amplifier means connected to said switching means for amplifying said selected linearly amplified

input television signals so that the selected linearly amplified input television signals or the differences in characteristics between the selected linearly amplified input television signals are monitored by the television picture monitor apparatus.

3,862,357
HOLOGRAM RECORDING AND RECONSTRUCTING SYSTEM

Yasunori Kanazawa, and Hiroshi Takano, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 18, 1973, Ser. No. 361,420
Int. Cl. H04n *1/22*; **G02b** *5/18*
U.S. Cl. 178—6.8 **20 Claims**



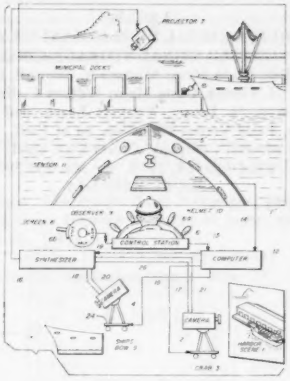
1. In a method of
recording a hologram of an object which includes the steps of:
   a. separating a beam of light into a first beam and a second beam,
   b. directing said first beam onto an object, the hologram of which is to be recorded, to thereby provide an object beam,
   c. passing said object beam through a Fourier-transform lens which focuses said object beam upon a hologram recording medium, and
   d. directing said second beam, as a reference beam, onto said hologram recording medium to interfere with said object beam on said medium and form a hologram of said object thereon;
reconstructing an image of said object from said hologram by the step of
   e. illuminating said hologram recorded on said hologram recording medium with a reconstruction light beam, to thereby form a reconstructed image of said object,
the improvement wherein
   step (a) includes the step of selectively filtering out a predetermined spatial frequency band from said first beam, to that said first beam which is directed onto said object illuminates said object without said predetermined spatial frequency band; and
   step (e) includes the step of illuminating said hologram recorded on said hologram recording medium with a reconstructing beam of light which includes said predetermined spatial frequency band.

3,862,358
VISUAL SIMULATION SYSTEM

Hanns H. Wolff, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 195,637, Nov. 4, 1971, abandoned. This application Sept. 21, 1973, Ser. No. 399,564
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **9 Claims**

1. A visual simulation system for providing on a viewing screen a composite scene including a background image and a foreground image that experience relative movements in response to movements of an observer's point of view so as to simulate parallax, said system comprising:
first and second television cameras respectively viewing background and foreground scenes;
television projection means, coupled to said first and second television cameras for producing said images on said screen;
synthesizer means, connected to said television cameras and to said projection means, for inserting said foreground image into said background image, said synthesizer being responsive to image positioning signals for determining azimuthal relation between said foreground image and said background image;

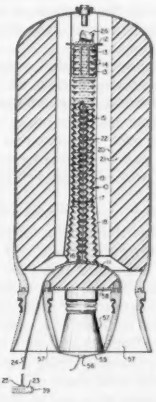


sensor means, disposed in predetermined relation to said screen, for providing observer position signals that are representative of an observer's changing point of view of said screen;
image shift computer means, connected to said sensor means and responsive to said observer position signals, for providing said image positioning signals as a function at least of said observer's point of view.

3,862,359
INFLATABLE INSPECTION INSTRUMENT

Edward E. McCullough, Brigham City, and Jimmy Petersen, Tremonton, both of Utah, assignors to Thiokol Corporation, Bristol, Pa.

Filed Oct. 9, 1973, Ser. No. 404,523
Int. Cl. H04n *7/18*
U.S. Cl. 178—7.1 **13 Claims**



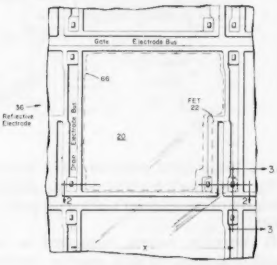
1. An instrument for inspecting elongated cavities, comprising:
a collapsible, inflatable bellows column, extensible in one direction, having an outer end and a base end;

an observing means on the outer end of the bellows column;
a receptacle for receiving a source of gas for inflating the bellows column;
valve means connected between the receptacle and the bellows column for metering gas as desired thereto; and
means for controlling the observing means.

3,862,360
LIQUID CRYSTAL DISPLAY SYSTEM WITH INTEGRATED SIGNAL STORAGE CIRCUITRY

Hans G. Dill, Costa Mesa; Michael N. Ernstoff, Los Angeles; Ronald M. Finnila, Costa Mesa; William C. Hoffman, Torrance; Alex M. Leupp, Newport Beach, and Richard N. Winner, Palos Verdes Peninsula, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 18, 1973, Ser. No. 352,397
Int. Cl. H04n *5/66*
U.S. Cl. 178—7.3 D **6 Claims**

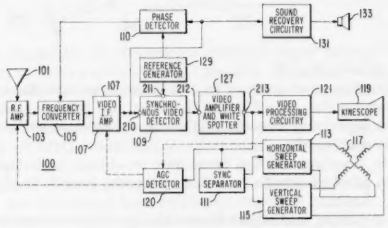


1. A liquid crystal display panel for providing a pictorial display in response to control signals and video signals applied thereto, said display panel comprising:
a transparent electrode plate adapted for being biased to a preselected electrical potential level;
a semiconductor backplate disposed adjacent to and spaced apart from said transparent electrode plate;
a quantity of liquid crystal material disposed in the spacing between said transparent electrode plate and said semiconductor backplate;
a plurality of substantially parallel, equally spaced, conductive gate buses on the surface of said semiconductor backplate which is nearer said transparent electrode plate;
a plurality of substantially parallel, equally spaced conductive drain buses on said surface of said semiconductor plate, said drain buses being orthogonal to and electrically insulated from said gate buses, whereby a cell area is defined where each adjacent pair of drain buses are intersected by a pair of adjacent gate buses;
an insulation layer over each said cell area of said semiconductor backplate;
an array of light reflective electrodes with a different one of said reflective electrodes being disposed on top of the insulation layer for each of said cell areas such that the combination of each said reflective electrode and the contiguous portion of the semiconductor backplate underneath said insulation layer possesses electrical characteristics analogous to those of a capacitor;
a plurality of field effect transistors with different ones of said field effect transistors being disposed in a particular corner of each cell area, each said field effect transistor having a gate element disposed between a source element and a drain element and with each gate element being electrically connected to the adjacent gate bus, each drain element being electrically connected to the adjacent drain bus and each source element being electrically connected to the reflective electrode of the associated cell area; whereby all of the gate elements for each row of said cell areas are electrically coupled together and all the drain elements of all said cell areas of each column are electrically coupled together, and in response to the sequential application of control signals to each of said gate buses and to the parallel application of said video signals to each of said drain buses, the potential of each reflective electrode may be rapidly programmed in accordance with a given pictorial format.

3,862,361
VIDEO AMPLIFIER CIRCUIT FOR USE WITH SYNCHRONOUS DETECTORS

John Barrett George, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,673
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.3 R **9 Claims**



1. Apparatus for processing amplitude modulated signals comprising:
a source of carrier waves bearing intelligence encoded in amplitude modulation thereof, said carrier waves likely to be accompanied by and contaminated with impulse noise;
an amplitude modulation detector having an input circuit coupled to said source of carrier waves an output circuit for providing recovered intelligence and being responsive to said impulse noise whereby said recovered intelligence produced at said output circuit includes impulse noise of first and second polarities relative to said intelligence;
utilization means for said recovered intelligence; and
common signal processing means coupling said output circuit to said utilization means for providing an even number of signal inversions of said recovered intelligence including said impulse noise of a first polarity and an odd number of signal inversions to said impulse noise of said second polarity.

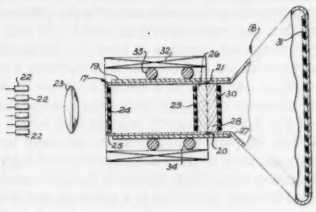
3,862,362
DISPLAY APPARATUS

Charles Vincent Stanley, Granada Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 24, 1970, Ser. No. 101,301
Int. Cl. H04n *3/16*
U.S. Cl. 178—7.3 D **6 Claims**

1. Display apparatus comprising: a first source of light; light scanning means for scanning light in a first direction; first means in the path of said light scanning means to modulate the intensity of the light output of said source in accordance with light received from said scanning means; a first electron tube including a transparent evacuated envelope having a longitudinal axis; a photocathode fixed relative to said envelope inside thereof at one end and providing an electron stream in accordance with said received light thereof; second means to direct the light output of said source onto said photocathode along a first line generally perpendicular to said axis and to said light scanning direction; third means to produce an axial

first magnetic field through said first tube substantially perpendicular to the plane of said photocathode to keep said electron stream emanating therefrom located in substantially an axial orientation; a luminescent screen fixed relative to said

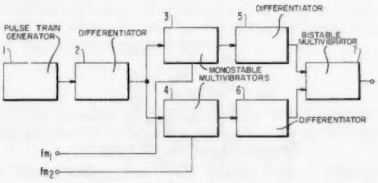


envelope inside thereof at the other end thereof; and fourth means to deflect said electron stream in a direction parallel to said light scanning direction and perpendicular to said axis so that said stream will intercept said screen along a second line substantially parallel to said first line.

3,862,363
PULSE PHASE DOUBLE MODULATION SYSTEM FOR RESPECTIVELY MODULATING THE LEADING AND TRAILING EDGES OF A CARRIER PULSE WITH TWO DIFFERENT INFORMATION SIGNALS

Kenji Tanimoto, Tokyo, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1973, Ser. No. 332,607
Claims priority, application Japan, Feb. 17, 1972, 47-15987
Int. Cl. H04j *7/00*
U.S. Cl. 179—15 AW **2 Claims**



1. A system for communicating two information signals, comprising

means for generating a carrier pulse wave;

means for modulating the leading edge of each pulse of said carrier pulse wave with one of said two information signals, said means for phase modulating the leading edge of said carrier pulse wave comprising (a) means for deriving first pulses corresponding to the said leading edges of the carrier pulse wave, (b) a first monostable multivibrator responsive to said first pulses and said one information signal, so that the phase of the trailing edges of the first monostable multivibrator output pulses are modulated by said one information signal, and (c) means for extracting first modulated pulses from said last-mentioned output pulses corresponding to the trailing edges thereof;

means for phase modulating the trailing edge of each pulse of said carrier pulse wave with the other of said two information signals to thereby obtain a double phase modulated signal;

means for transmitting the double phase modulated signal over a communications link;

means at the receiving end of the link for generating a first reference signal responsive to the said carrier pulse wave indicating the phase of the leading edge of said carrier pulse wave;

means at the receiving end of the link for generating a second reference signal responsive to the said carrier pulse wave indicating the phase of the trailing edge of said carrier pulse wave;

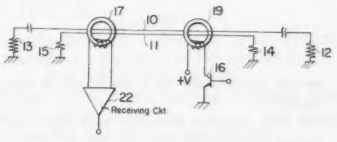
means responsive to the double phase modulated signal and said first reference signal for demodulating the double phase modulated signal to obtain said one information signal; and

means responsive to the double phase modulated signal and said second reference signal for demodulating the double phase modulated signal to obtain said other information signal.

3,862,364
TRANSMITTING-AND-RECEIVING APPARATUS FOR PERFORMING DATA TRANSMISSION THROUGH COMMON BUS

Fumiyuki Inose, Kokubunji; Hideo Nakamura, Hachioji, and Kazuo Takasugi, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 15, 1972, Ser. No. 315,551
Claims priority, application Japan, Dec. 15, 1971, 46-101002
Int. Cl. H04l *5/14*
U.S. Cl. 178—59 **4 Claims**



1. In a system wherein a plurality of transmitting-and-receiving stations are connected to a bus for performing data communication among said stations through the common bus, each of said transmitting-and-receiving stations comprising signal transmitting means for transmitting data to said bus, first coupling means including a first magnetic core arrayed so that said bus penetrates substantially through the center thereof, and a first winding wound about said first core and having a signal from said signal transmitting means supplied thereto, signal receiving means for receiving data on said bus, second coupling means including a second magnetic core arrayed so that said bus penetrates substantially through the center thereof, and a second winding wound about said second core and providing an output signal to said signal receiving means, and a conductor line arranged so as to penetrate substantially through the centers of said first and second magnetic cores with both ends thereof being terminated with terminal impedance elements respectively.

3,862,365
SYNCHRONIZING SYSTEM FOR A PLURALITY OF SIGNAL TRANSMITTERS USING OSCILLATORS OF HIGH FREQUENCY STABILITY

Hachisaburo Kobayashi, Yokohama; Shigeru Toyosaki, Tokyo; Hisashi Uchida, Tokyo; Yoshikatsu Sato, Tokyo; Kohei Saitoh, Tokyo, and Masakazu Tsuji, Tokyo, all of Japan, assignors to Nippon Haso Kyokai and Nippon Electric Company, Limited, both of Tokyo, Japan

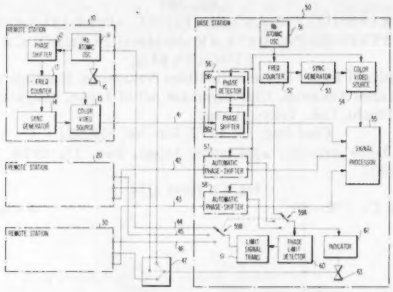
Filed Nov. 8, 1972, Ser. No. 304,880
Claims priority, application Japan, Nov. 12, 1971, 46-89917; Nov. 12, 1971, 46-90966; Nov. 12, 1971, 46-90967
Int. Cl. H04b *3/50*
U.S. Cl. 178—69.5 R **9 Claims**

1. In a synchronizing system for a plurality of signal transmitters, one of said transmitters situated at a base station and at least one other transmitter situated at a remote station, each of said transmitters including an independently operating reference frequency signal oscillator, the improvement for

maintaining phase synchronization between the signals generated by the oscillator at said base station and the oscillator at said remote station, comprising:

first transmission means at said remote station for transmitting to said base station a signal having a phase dependent on the phase of the signal generated by the oscillator at said remote station,

phase detector means at said base station connected to receive the signal generated by the oscillator at said base station and the signal transmitted by said first transmission means for producing varying phase difference signal proportional to the changing phase difference between the signals generated by the oscillators at said base and



remote stations due to a difference in frequency of the signals,

phase limit detector means at said base station and connected to said phase detector means to receive said varying phase difference signal for producing a limit signal when said varying phase difference signal exceeds a predetermined value,

second transmission means at said base station for transmitting to said remote station said limit signal, and

frequency changing means at said remote station connected to receive said limit signal for changing the frequency of the oscillator at said remote station in a direction to invert the sign of said varying phase difference signal.

3,862,366

SOUND RADIATION SYSTEM

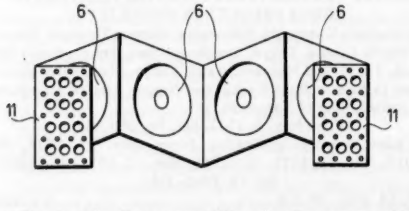
Denes Huszty; Andras Illenyi; Ilona Magos Nee Nemeth, and Karoly Szabados, all of Budapest, Hungary, assignors to Elektroakusztikai Gyar, Budapest, Hungary

Filed Aug. 10, 1972, Ser. No. 279,515

Claims priority, application Hungary, Aug. 16, 1971, EE 1935

Int. Cl. H04r *1/02*

U.S. Cl. 179—1 E **2 Claims**



1. In a sound radiator comprising a low frequency and high frequency sound radiating unit housed in a common housing and an electronic circuit for said unit comprising an output amplifier and low-pass and high-pass filters, said high frequency sound radiating unit comprising at least three loudspeakers excited by the same signal source and each having a flat front panel perpendicular to the radiating axis of the speaker, the panels being on a common level and meeting each other at angles substantially different from 180° along lines that are parallel to each other, said axes of adjacent speakers intersecting each other alternately before and behind said speakers; the improvement in which said high frequency sound radiating unit contains at least four loudspeakers, said low frequency sound radiating unit comprising a single loudspeaker whose center is at a distance of not more than 1.5 times the diameter of the low frequency loudspeaker from the center of the high frequency loudspeaker which is farthest from the low frequency loudspeaker, the wave length of the crossover frequency of the low frequency and high frequency sound radiating units being not more than the smallest dimension of said housing measured in a plane perpendicular to said axis of the low frequency loudspeaker, and a multiperforate barrier sheet disposed in front of at least a portion of said high frequency loudspeakers, the perforations through said sheet occupying less than half the area of said sheet.

3,862,367

AMPLIFYING CIRCUIT FOR USE WITH A TRANSDUCER

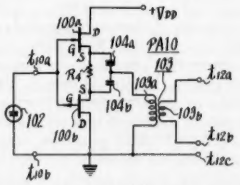
Osamu Kono, Tokyo; Takeshi Matsudaira, Kamakura, and Makoto Ishikawa, Tokyo, all of Japan, assignors to Sony Corporation Inc., Tokyo, Japan

Filed Feb. 28, 1973, Ser. No. 336,819

Claims priority, application Japan, Mar. 2, 1972, 47-21876; Aug. 15, 1972, 47-81569

Int. Cl. H04r *3/00*

U.S. Cl. 179—1 A **5 Claims**

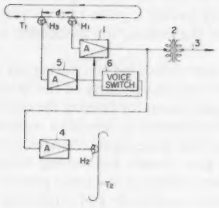


1. An amplifying circuit for use with a signal source comprising first and second field-effect transistors which are of different conductive types, each of which has gate, drain and source electrodes, the gate electrodes of the first and second field-effect transistors being connected to each other, a resistor connecting the source electrodes of the first and second field-effect transistors to each other, means for supplying power to the drain electrode of the first field-effect transistor, means for connecting the signal source between the interconnected gate electrodes of the first and second field-effect transistors and the drain electrode of the second field-effect transistor, and an output circuit including first and second capacitors connected to each other in a series circuit which is connected in parallel with said resistor, and a transformer having a primary winding connected, at one end, to said series circuit between said first and second capacitors and, at its other end, to the drain electrode of the second field-effect transistor.

3,862,368
AUTOMATIC TELEPHONE ANSWERING APPARATUS

Takashi Sato, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 26, 1973, Ser. No. 326,722
Claims priority, application Japan, Jan. 26, 1972, 47-9718
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 R **3 Claims**

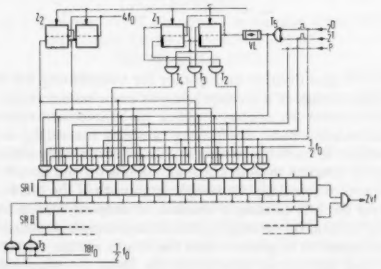


1. An automatic telephone answering apparatus comprising:
a. a first magnetic tape for an outgoing message;
b. a first magnetic head for reproducing the outgoing message;
c. a first amplifier means to amplify and send out the output signal of the first magnetic head over a telephone line;
d. a second magnetic head positioned to reproduce the outgoing message recorded on the first magnetic tape prior to the first magnetic head;
e. voice switching means responsive to the output of said second magnetic head for controlling said first amplifier means such that said first amplifier means is ON only when a voice signal on said first magnetic tape is reproduced by said first magnetic head;
f. a second magnetic tape coupled to the output of said first amplifier means for recording an incoming message; and
g. a third magnetic head to record the incoming message on the second magnetic tape.

3,862,369
METHOD OF AND APPARATUS FOR TRANSFERRING ASYNCHRONOUS INFORMATION IN A SYNCHRONOUS SERIAL TIME MULTIPLEX

Horst Hessenmuller, and Willy Bartel, both of Darmstadt, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 5, 1972, Ser. No. 269,029
Claims priority, application Germany, July 8, 1971, 2133995
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BA **4 Claims**



1. In a telecommunication switching system a method for transferring asychronous information in synchronous serial form wherein the asynchronous information comprises polarity reversals occurring on parallel lines and wherein line addresses of the polarity reversals are in parallel coded form and have a number of bits equal to K, comprising the steps of:
determining, at the sending station for said asynchronous information, a time address in which of a number 2^m time intervals forming a pulse frame T_o one of N of said polarity reversals has occurred, said frame T_o having a duration equal to N groups of data of N polarity reversals in serial form plus a synchronous word F, each said group of data consisting of said time address comprising the time interval in said frame when said one polarity reversal occurred, said line address and information as to the polar direction of said one polarity reversal,
storing the parallel coded time address result of said determining step in shift register means,
triggering said shift register means for writing in said parallel coded time address information and reading it out in the order of its arrival forming a synchronous serial information signal,
transmitting said serial information signal to a receiver station and
converting said serial information signal into a parallel coded informatin signal having K bits in dependence on said time address and utilizing timing signals used for operating data processing apparatus at the receiving station.

3,862,370
TIME DIVISION ELECTRONIC SWITCHING SYSTEM FOR EXTERNAL HIGHWAYS OF DIFFERENT MULTIPLEXING RATIOS

Shinsuke Kadota, Tokyo, Japan, assignor to Nippon Electric Company Ltd., Tokyo, Japan

Filed Oct. 6, 1972, Ser. No. 295,650
Claims priority, application Japan, Oct. 8, 1971, 46-78768
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 BV **6 Claims**

1. A time division electronic switching system of a predetermined multiplexing ratio adapted to be connected to at least two external highways transmitting external time division multiplexed pulse signals of different multiplexing ratios, respectively, said system being of the type including a plurality of internal highways for transmitting internal time division multiplexed pulse signals at the respective time slots thereof, a common control means responsive to the data supplied through one of said external highways for producing compiled data, and a highway switch means interposed between said internal highway and responsive to the compiled data for spatially interconnecting the internal highways specified by the compiled data, wherein the improvement comprises multiplexing ratio transforming means coupled to said external highways on the one hand and said internal highways on the other hand for transforming the multiplexed signals on incoming ones of said external highways into multiplexed signals of multiplexing ratio equal to said predetermined multiplexing ratio and for transforming the multiplexed signals on outgoing ones of said internal highways into multiplexed signals of multiplexing ratios equal to the multiplexing ratios of outgoing ones of said external highways, and pulse shifter means inter-

posed in said internal highways between said multiplexing ratio transforming means and said highway switch and responsive to the compiled data for altering the order of arrangement of the pulse signals of said internal multiplexed pulse signals transmitted through said internal highways.

3,862,371

MESSAGE TRANSMISSION SYSTEM WITH PULSE COMPRESSION

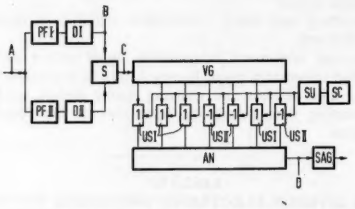
Hans Neustadt, 6050 Offenbach, Offenbach, Germany

Continuation-in-part of Ser. No. 116,518, Feb. 18, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 327,216

Claims priority, application Germany, Feb. 24, 1970, 2008560

Int. Cl. H04b *7/00*

U.S. Cl. 179—15 AC **3 Claims**



2. A method of transmitting code words in a system, digitally, wherein the code words are comprised of a plurality of code elements each having a duration τ, and the code elements comprise one of two possible states, one of these states being a time dependently rising frequency function and the other of these states being a time dependently falling frequency function, comprising the steps of: transmitting the code words; receiving the code words; and compressing the received code words on the basis of the time dependent rising and falling frequency functions thereby producing a first compressed signal and compressing said first compressed signal digitally to improve the output signal to noise ratio.

3,862,372

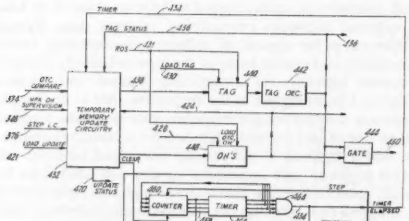
BRANCH EXCHANGE INCLUDING ELECTRONIC TIMER

Herman Deutsch, Raleigh, N.C., assignor to Tele-Resource, Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 291,960, Sept. 25, 1972,. This application July 2, 1973, Ser. No. 375,459

Int. Cl. H04m *3/00*

U.S. Cl. 179—15 AT **2 Claims**



1. A time division multiplex branch exchange for a telephony system comprising:

a multiplicity of sets of binary storage elements that form a recirculating temporary memory, each set forming an address portion and a timer portion;

means for loading the addresses assigned to equipment that may be interconnected through a common time slot into the address portions of each set of storage elements;

time division switch means responsive to said temporary memory for gating an audio connection between equipment assigned the addresses that appear simultaneously in one set of storage elements;

counter means for periodically incrementing the contents of each timer portion in sequence;

selector means for selecting a time base signal of varying polarity having a pulse rate corresponding to the condition of the connection associated with a particular time slot;

comparator means for comparing the output of the counter means with the polarity of the selected time base signal; first gate means for causing the counter means to increase the corresponding recorded number each time the selected time base signal changes polarity; and

second gate means for sensing when a recorded binary number contained in a timer portion has reached a predetermined magnitude and producing an output to indicate that a time interval has elapsed.

3,862,373

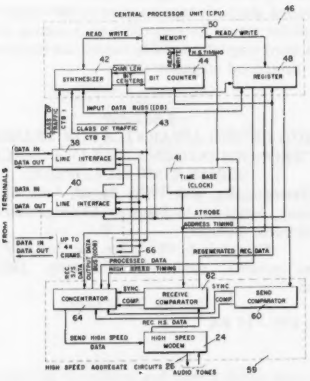
ADAPTIVE SAMPLING RATE TIME DIVISION MULTIPLEXER AND METHOD

Peter J. Cohen, Stony Brook, and Phillip W. Ackerman, Smithtown, both of N.Y., assignors to Databit Incorporated, Hauppauge, N.Y.

Continuation of Ser. No. 215,816, Jan. 6, 1972, abandoned. This application Nov. 21, 1973, Ser. No. 418,029

Int. Cl. H04j *3/16*

U.S. Cl. 179—15 BV **2 Claims**

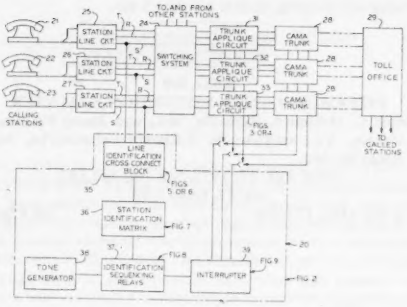


1. A time division multiplexer for transmitting the content of bit streams of data appearing on one channel at one speed and another channel at another speed over a medium on a time-sharing basis; comprising sampling means for sampling each bit in each bit stream at a rate substantially higher than the bit streams so as to place all the bits on one line, selecting means for selecting one sample from each of the bits to regenerate the bits as sample streams, resampling means having a first portion for resampling the slower sample stream at a first rate equal to or greater than the slower sample stream and a second portion for resampling the faster sample stream at a rate which is an integral multiple of the first rate and equal to or faster than the speed of the faster sample stream, and means coupled to said resampling means for interleaving the sampled data.

3,862,374
CALLING STATION IDENTIFIER-SENDER

Harry G. Evers, Genoa, Ill., assignor to Antel Corporation, Arlington Heights, Ill.

Filed Jan. 21, 1974, Ser. No. 435,342
Int. Cl. H04q 3/72
U.S. Cl. 179—18 FH 9 Claims



1. In a telephone system or like communication system of the kind comprising a plurality of calling stations each connectable to a plurality of called stations through a series of trunk circuits each including a data path and a control path, a combined calling number identifier and sender capable of simultaneous identification of a multiplicity of calling station numbers and able to send the identity of those numbers out over a plurality of trunk making concurrent requests, the identifier-sender comprising:

signal-actuated identity transmitting means for transmitting the identity of a calling station, as a sequence of signals, through a first switched conductor incorporated in a path from a line circuit to an outgoing trunk extending to a called station;

actuating means for applying an actuating signal from the trunk to the transmitting means, over a switched conductor, requesting identification of the calling number;

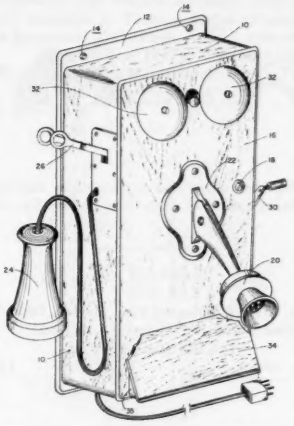
and interrupter means for effectively disconnecting the data path between the calling station and the transmitting means, to preclude data transmission during operation of the transmitting means.

3,862,375
TELEPHONE

Wesley L. Thomas, 109 S. Catalina, Los Angeles, Calif. 90004

Filed July 23, 1973, Ser. No. 381,691
Int. Cl. H04m 1/02
U.S. Cl. 179—100 R 6 Claims

1. A telephone assembly including a rectangular housing shaped to be mounted on a vertical wall, a rectangular front door hinged to the housing, a telephone transmitter mounted on the front door, a hook mounted on the side of the housing, a telephone receiver shaped to be removably supported by the hook, and an electrical telephone set base with electrical components thereon mounted within the housing, an electric cord connected to said electrical components on said base to connect the electrical components to a telephone line, electrical connections from the electrical components on the base to the receiver and to the transmitter, a movable shelf mounted under the transmitter on the front surface of the door to form an enclosure, and a manually operated telephone control touch tone unit or dial mounted on the door within said enclosure and electrically connected to said electrical components on said base in the housing, said control touch tone unit or dial

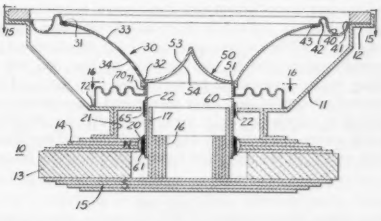


being normally covered by the shelf and made accessible when the shelf is moved to an open position on the door.

3,862,376
CONE CONSTRUCTION FOR LOUDSPEAKER

Stanley F. White, 466 E. Vallette, Elmhurst, Ill. 60126

Filed Jan. 19, 1973, Ser. No. 325,162
Int. Cl. H04r 7/12; G10k 13/00
U.S. Cl. 179—115 R 17 Claims



1. In a loudspeaker having a frame and a magnetic structure providing an annular magnetic air gap, a cone assembly which comprises a cone body forming a convexly curved front surface and having a periphery and a central throat with a voice coil at the throat extending into the air gap, a flexible surround and a flexible spider for mounting the periphery and voice coil for free axial movement, the cone body having an effective axial thickness which varies generally inversely with the radius so that the product of the effective axial thickness at a given radius multiplied by the circumferential length at that radius is substantially constant across the width of the cone body.

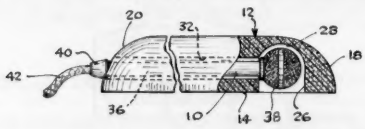
3,862,377
FLOOR WAVE MICROPHONE STAND

Louis Burroughs, Lake Havasu, Ariz., assignor to Electro-Voice, Incorporated, Buchanan, Mich.

Filed May 29, 1973, Ser. No. 364,309
Int. Cl. H04r 1/02
U.S. Cl. 179—146 R 4 Claims

1. A microphone and stand assembly comprising a body of open cellular foam plastic having between 10 and 80 voids per linear inch and at least 90 percent of its volume in voids, one side of said body being flat and adapted to rest upon a flat

surface, said flat side having a recess extending therein, said recess terminating at a distance no less than one-sixteenth inch from the adjacent surface of the body, and a microphone

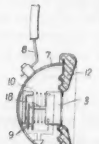


disposed within the recess and supported by the body, the microphone being spaced from the plane of the flat surface of the body.

3,862,378
EAR SET
J. Ray Norris, 4701 Wilmington Pike, Dayton, Ohio 45440
Filed Dec. 6, 1973, Ser. No. 422,402
Int. Cl. H04m *1/05*
U.S. Cl. 179—156 A **10 Claims**

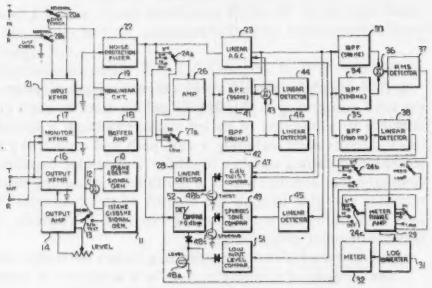
1. An ear set, which includes: housing means for receiving and housing miniaturized electronic sound receiving and emitting equipment, curved lever means having one end portion designed as a free end portion and having its other end portion pivotally connected to said housing means, and pre-loaded spring means interposed between and fully encased by said one end portion of said lever means and the adjacent housing portion to which said lever means is pivotally connected, said spring means continuously urging said free end portion of said lever means in the direction toward said housing means.

3,862,379
HEADPHONE CONSTRUCTION FOR INTERPRETER TRANSLATOR ARRANGEMENTS
Ernst Pless, Vienna, Austria, assignor to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H., Vienna, Austria
Filed July 10, 1973, Ser. No. 377,897
Claims priority, application Austria, July 11, 1972, A5948/72
Int. Cl. H04m *1/02, 1/05*
U.S. Cl. 179—167 **3 Claims**



1. A headphone construction particularly for language school and interpreter installations, comprising an earphone housing having an open ear facing end, a cushion affixed to said housing and extending outwardly around the open end, an electroacoustic transducer in said housing, an electrical current supply connected to said transducer and having an interrupter switch, said switch having means for disconnecting electrical current supply to said electroacoustic transducer and having first and second contact which are normally opened but which are engageable to actuate said circuit, a spring between said transducer and one of said contacts holding said transducer against said cushion and being displaceable by compression of said cushion when it is engaged with a user's ear to urge said transducer against said spring and to cause said spring to move one of said contacts to engage the other of said contacts, and a head band on said housing for biasing said housing against a person's ear.

3,862,380
INTERMODULATION DISTORTION ANALYZER
Norris C. Hekimian, Rockville, Md., and James F. Turner, Oakton, Va., assignors to Hekimian Laboratories, Inc., Rockville, Md.
Filed Apr. 19, 1973, Ser. No. 352,552
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 R **26 Claims**



1. A distortion analyzer for a communication channel under test having a known frequency passband, said distortion analyzer comprising:

means for generating at least four alternating test signals;

wherein the frequencies of more than one second order intermodulation product and more than one third order intermodulation product of said test signals reside within the passband of said communication channel under test;

means for simultaneously applying all of said test signals to said communication channel under test;

input means for receiving signals from said communication channel under test;

means for monitoring selected intermodulation distortion products of said test signals present in said signals received by said input means; wherein said means for monitoring comprises:

an automatic gain control circuit for automatically adjusting the level of signals received by said input means to a constant reference level in response to a relatively wide range of received signal levels;

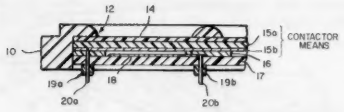
filter means for separating said selected intermodulation products from said signal of constant reference level; and

means for providing a visual indication representing the amplitude of said separated selected intermodulation products.

3,862,381
KEYBOARD SWITCH ASSEMBLY WITH MULTILAYER, COEXTENSIVE CONTACTOR MEANS

Frank Joseph Glaister, Salisbury; Vincent Squitieri, Billerica, and William J. Lynn, Groveland, all of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Filed Oct. 29, 1973, Ser. No. 410,327
Int. Cl. H01h *13/70, 1/02*
U.S. Cl. 200—5 A **17 Claims**

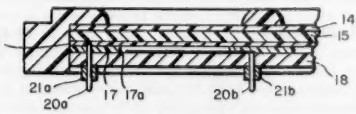


1. A keyboard assembly including in combination an electrical circuit board having contact elements, a separator insulator layer positioned over said circuit board, said separator insulator layer having openings registerable with portions of said contact elements, the improvement being a composite contactor positioned over said separator layer for movement through each of said openings to contact said contact elements said contactor comprising a nonconductive resilient, flexible, elastomeric layer supporting an electrically conductive non-elastomeric and non-selfsupporting flexible plastic layer adhered thereto and coextensive therewith for movement therewith, said non-conductive layer being
greater in thickness than said conductive layer and said conductive layer having a volume resistivity of about or less than 10 ohm centimeters, and said conductive layer being positioned directly over said openings.

3,862,382
KEYBOARDS SWITCH ASSEMBLY WITH MULTILAYER PATTERN CONTACT MEANS

Frank Joseph Glaister, Salisbury; Vincent Squitieri, Billerica, and William J. Lynn, Groveland, all of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Filed Oct. 29, 1973, Ser. No. 410,328
Int. Cl. H01h *13/70, 1/02*
U.S. Cl. 200—5 A **28 Claims**

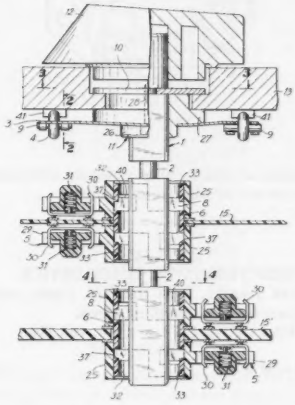


1. In a keyboard the combination of a circuit board supporting a plurality of electrically conductive pathways, a separator positioned upon the top of said board and conductive pathways and having a plurality of openings in register with selected portions of said pathways, the improvement comprising an elastomeric layer having adhered thereto and supported thereby for movement therewith a plurality of nonselfsupporting flexible conductive plastic contactors, said conductive plastic contactors comprising a plastic binder and electrically conductive particles dispersed therein, said contactors positioned over said openings so that pressure selectively applied to said elastomeric layer forces selected ones of said contactors through selected openings into contact with said selected portions of said pathways and release of said pressure permits the elastomeric layer to return to its original shape while pulling the contactors adhered thereto away from the pathways.

3,862,383
MULTIPOSITION ROTARY SWITCH ASSEMBLY WITH COUPLING SLEEVE FOR SEGMENTED ROTOR

Jerzy Bednarek, and Waclaw Kosianko, both of Warszawa, Poland, assignors to Tadeusz Kielak, Warskiego and Edmund Szymanski, Okinskiego, both of, Poland

Filed Oct. 1, 1973, Ser. No. 402,628
Claims priority, application Poland, Oct. 2, 1972, 158041
Int. Cl. H01h *3/38, 19/58*
U.S. Cl. 200—11 R **10 Claims**



1. A multi-position rotary switch comprising a support structure, a shaped shaft rotatably mounted in said support structure, said shaft including at least one reduced section providing integral shaped portions on opposite sides of said reduced section, said shaped portions being angularly turnable by forceably turning the same with respect to one another by virtue of said reduced section, at least one rotor slidably mounted on one of said shaped portions of the shaft, detent means fixed to the other of the shaped portions of the shaft and to the support structure to establish multiple angular operating positions for the shaft, and a stator on which the rotor travels, said rotor and stator including contact means to establish electrical connections in said operating positions, said rotor comprising two substantially identical parts facing one another and a coupling sleeve engaging the rotor parts and including means coupling said rotor parts together in angular and axially fixed relation.

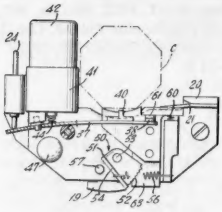
3,862,384
DISTRIBUTOR APPARATUS INCLUDING ADJUSTABLE DISTRIBUTOR PLATE AND REPLACEABLE CONTACT BREAKER MODULE ASSEMBLY

Joseph V. Hrabovsky, Salt Lake City, Utah, assignor to Rapid Technological Devices, Inc., New York, N.Y.

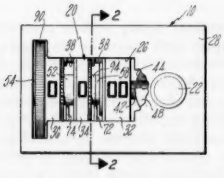
Filed Sept. 6, 1973, Ser. No. 394,946
Int. Cl. H01h *19/00*
U.S. Cl. 200—19 R **10 Claims**

1. An internal combustion engine distributor including a timing cam comprising a base plate, a first mechanical coupling located on said base plate, a first electrical coupling located on said base plate and insulated therefrom, and a replaceable modular unit including a breaker plate, a second mechanical coupling separably engaging said first mechanical coupling, a second electrical coupling mounted on said breaker plate and insulated therefrom, and separably engaging said first electrical coupling with the interengagement of said mechanical couplings, a pair of breaker point members mounted on said breaker plate, one of said breaker point

members being insulated from said breaker plate and electrically connected to said second electrical coupling and a condensor mounted on said breaker plate and electrically connected between said breaker point members.

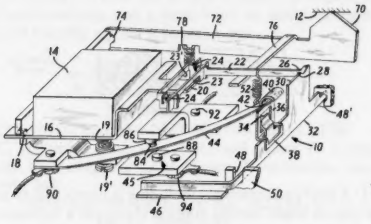


3,862,385
PREDETERMINING TIMER DEVICE
Arnold Clayton Johnson, West Hartford, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.
Filed Oct. 4, 1973, Ser. No. 403,376
Int. Cl. H01h *43/14*
U.S. Cl. 200—38 R **10 Claims**



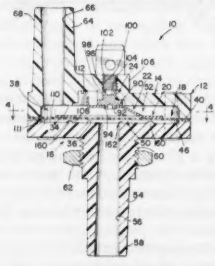
1. A timer device for controlling the operation of an electrical appliance comprising signal means for signaling completion of a timed operation; a predetermining counter comprising a plurality of number wheels including higher order and lower order number wheels mounted for rotation in a first rotatable direction out of a predetermined count readout and in the opposite rotatable direction toward said predetermined count readout, the number wheels including locking means positioned relative to said predetermined count readout; signal actuating means for movement into and out of a signal actuating position and having restraining means adapted when out of the actuating position to cooperate with the locking means of the number wheels to prevent the continued rotation of the wheels in said opposite rotatable direction beyond said predetermined count readout, the locking means on at least one lower order number wheel including cam means operative upon movement of the lower order number wheel in said first rotatable direction for releasing said restraining means and moving said signal actuating means into said actuating position, a signal actuation control mounted for rotation with said one lower order number wheel through a lost motion connection and having a shoulder effective to hold said restraining means out of engagement with said cam means during movement of said one lower order number wheel in said opposite rotary direction until said predetermined count readout is reached.

3,862,386
SNAP ACTION TYPE INERTIA SWITCH WITH VIBRATION AMPLICATION AND ACTUATOR MEANS
Robert A. Hall, Montclair, N.J., assignor to Guardian Industries, Inc., Springfield, N.J.
Filed Sept. 29, 1972, Ser. No. 293,354
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 R **6 Claims**



3. In a detector for mounting on a surface to detect vibration of the surface, an improvement that prevents circumvention of the detector by electrically shunting it and that comprises relay means, a power supply, three terminal means, three contact means respectively electrically connected to the three terminal means, one of the contact means being normally closed with respect to a second and open with respect to the third of the contact means, thereby placing the relay means in circuit with the power supply, and means responsive to vibration of the surface exceeding a predetermined intensity for opening the first contact means with respect to the second and closing the first contact means with respect to the third, thereby shorting the relay means, the means responsive to vibration of the surface comprising a relatively stationary mass mounted movably with respect to the surface so that the mass can remain relatively stationary when the surface vibrates.

3,862,387
MINIATURIZED DIFFERENTIAL PRESSURE SWITCH WITH INTEGRAL CONTACT AND SPRING MOUNTED ON DIAPHRAGM
James W. Phillips, Michigan City, and Richard S. Zoludow, South Bend, both of Ind., assignors to Dwyer Instruments, Inc., Michigan City, Ind.
Filed Dec. 17, 1973, Ser. No. 425,267
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 N **10 Claims**



1. In a differential pressure switch of the type including a housing having a diaphragm therein defining with said housing fluid pressure chambers on either side of said diaphragm of restricted depth, with said housing defining bores in communication to separate sources of fluid pressure, and an electrically conductive diaphragm plate received in one of said chambers

and seated on one side thereof against said diaphragm, with the housing portion that defines said one chamber being equipped with a pair of spaced apart electrical contacts mounted to project into said one chamber for engagement by said plate to close said contacts, the improvement wherein:

said diaphragm plate comprises a disc element defining a resiliently flexible tongue projecting laterally thereof and away from the diaphragm, and defining a projecting end portion,

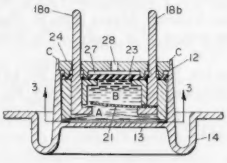
and means cooperating between said tongue end portion and said housing to cause said tongue to act as a range spring while resiliently spacing said disc element from said contacts whereby said disc element closes said contacts under predetermined pressure differentials in said chambers.

3,862,388

MANUALLY OPERABLE SWITCH WITH LIQUID OPERATING MEDIUM

John Lusti, River Vale, N.J., and Sergius Paul Krzyzanowski, Flushing, N.Y., assignors to Otis Elevator Company, New York, N.Y.

Filed July 23, 1973, Ser. No. 382,239
Int. Cl. H01h *13/50*
U.S. Cl. 200—160 **11 Claims**



1. A manually operable switch comprising a switch housing having a fixed contact mounted in said housing, a spring loaded movable contact also mounted in said housing and urged by spring force into a closed position in which the movable and fixed contacts are in engagement, an operating member suitable to have the finger of a person desiring to operate said switch pressed against it, and force transmitting means including a liquid element as its operating medium disposed in said housing, said means being in contact with said operating member and said movable contact and responsive to a predetermined amount of pressure applied to said operating member at a rate which is effective having regard to the characteristics of said force transmitting means whereby said means transmits through said liquid medium a temporary operating force generated by said pressure to said movable contact to operate said switch to move said movable contact against the opposing spring force from said closed position to an open one in which said movable contact is out of engagement with said fixed contact, said temporary operating force being dissipated sufficiently after said operation so that said spring force is enabled to restore said movable contact to said closed position regardless of said predetermined amount of pressure continuing to be applied to said operating member whereby said switch is again capable of operation in response to additional pressure applied at an effective rate.

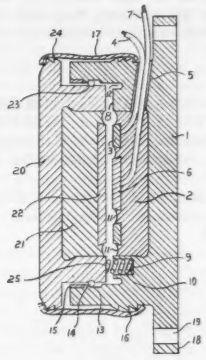
3,862,389

POSITIVE STOP ELECTRICAL SWITCH

Charles Thomas Lowe, 5165 Torrey Rd., Flint, Mich. 48507

Filed Mar. 26, 1973, Ser. No. 345,089
Int. Cl. H01h *9/04, 1/20*
U.S. Cl. 200—302 **7 Claims**

1. A combined mechanical stop and electrical switch, comprising a cuplike base housing and a cuplike operator housing disposed in opposed relationship to one another and positioned in slidable telescopic relationship to define a substantially closed chamber therebetween, each of said housings defining therein an inside cavity, a body of insulating material substantially filling each of said cavities and being fixed relative to the respective housing, an electrical contact embedded within each body of insulated material with said electrical contacts as mounted on the opposed housings being deposed opposite one another and positioned for contacting one another when said housings are slidably moved toward one another, the cavity in one of said housings having a bottom



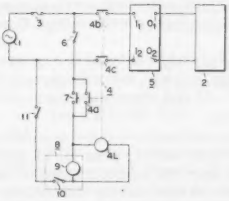
portion which is enlarged so as to mechanically hold the body of insulating material therein, and the contact as associated with said one housing comprising a disk having a tapered edge which is embedded and mechanically held within the respective body of insulating material, the exposed surface of said disk being substantially flush with the open end of said one housing, said one housing having an annular groove formed on the outer circumference thereof, an annular seal ring disposed within said groove and sealingly engaged between said pair of housings, and an annular flexible seal disposed in surrounding relationship to and extending between said pair of housings.

3,862,390

MICROWAVE OVEN APPARATUS FOR VARYING INTENSITY OF HEATING WAVES

Tomimitsu Noda, Fuji, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Sept. 6, 1973, Ser. No. 394,679
Claims priority, application Japan, Sept. 11, 1972, 47-91105
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **11 Claims**



1. A microwave oven apparatus comprising:

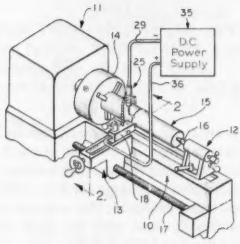
a pulse signal generator connected to a power source to generate pulse signals, and including means for varying the interval between successive pulses of said pulse signals;

a controlled rectifying circuit;
a high frequency oscillator, including a magnetron, for always oscillating at a substantially constant high frequency and connected to the output of said controlled rectifying circuit; and
a triggering circuit coupled to said pulse signal generator and to said controlled rectifying circuit for triggering said controlled rectifying circuit upon receipt of pulse signals from said pulse signal generator to intermittently energize said high frequency oscillator, for controlling the net DC energy supplied to said magnetron from said power source while the oscillating frequency of said high frequency oscillator remains substantially constant.

3,862,391
METHOD AND APPARATUS FOR REMOVING MATERIAL FROM A WORKPIECE

Oscar C. Blomgren, Sr., and Oscar C. Blomgren, Jr., both of Lake Bluff, Ill., assignors to Inter-Probe, Inc., North Chicago, Ill.

Filed Dec. 20, 1973, Ser. No. 426,504
Int. Cl. B23p *25/00*
U.S. Cl. 219—68 **29 Claims**



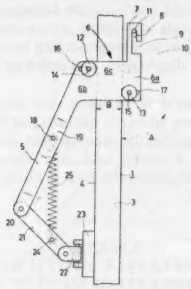
1. Apparatus for precision removal of material from an electrically conductive workpiece comprising, means for rotating the support means and workpiece, an electrically conductive material removal tool, means for supporting the tool in relation to the workpiece for removing material therefrom, a needle-like probe supported adjacent to and electrically insulated from the workpiece and the tool having a tip end, said tip end being spaced closer to the workpiece than the tool, and a source of high-voltage milliampere D.C. potential connected between the probe and tool producing a potential sufficient to create an electrical arc between the tip end and the workpiece.

3,862,392
DEVICE FOR AN APPARATUS FOR THE AUTOMATIC ELECTRIC ARC WELDING APPARATUS

Gerardus Antonius Maria Willems, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 194,964, Nov. 2, 1971, abandoned. This application May 7, 1973, Ser. No. 357,648
Int. Cl. B23k *9/18*
U.S. Cl. 219—73 **5 Claims**

1. In an automatic electric welding apparatus operable with a vertically movable welding head for joining in a generally vertical welded seam the adjacent edges of two sheets, with molten metal in said seam during said welding operation and the two edges and seam having corresponding front and rear sides, the improvement in combination therewith of means for preventing a flow of the molten metal out of the seam, comprising a front block secured to the welding head and urged against the front of the seam, a rear block, a holder having the rear block secured thereto and urging said rear block resiliently against the rear of said seam, means for detachably coupling said welding head to said holder for moving said holder and rear block upward, and restraining means on the

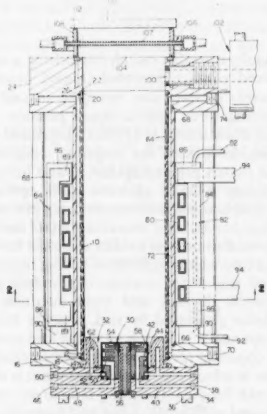


holder for maintaining the holder in a fixed position relative to said seam and the rear block in a fixed position against the seam, when said welding head is detached from the holder.

3,862,393
LOW FREQUENCY INDUCTION PLASMA SYSTEM

Peter H. Dundas, Andover, Mass.; John W. Poole, and Charles E. Vogel, both of Bow, N.H., assignors to Humphreys Corporation, Bow, N.H.

Continuation of Ser. No. 173,500, Aug. 20, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 327,082
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **12 Claims**



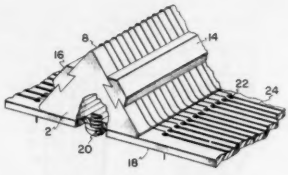
1. An induction plasma system for use with an ignition source comprising:
structure defining an elongated plasma chamber,
an electrical coil surrounding said chamber,
means for supplying a plasma forming material for flow into said chamber and conversion to plasma condition under the influence of an electromagnetic field produced by said electrical coil, and exhaust port structure at one end of said chamber defining a port for flow of said material from said chamber, wherein the improvement comprises a low frequency power supply connected to said coil for creating an intense electromagnetic field within said chamber, and
magnetic enhancement structure disposed adjacent said coil, said magnetic enhancement structure providing

magnetic flux density in said chamber that is at least twice the flux density that exists in said chamber in the absence of said magnetic enhancement structure.

3,862,394
THERMAL RECORDING PRINT HEAD AND METHOD FOR MANUFACTURING SAME

Charles E. Lane, III, Meadowbrook, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 3, 1974, Ser. No. 457,622
Int. Cl. H05b *1/00*
U.S. Cl. 219—216 **8 Claims**

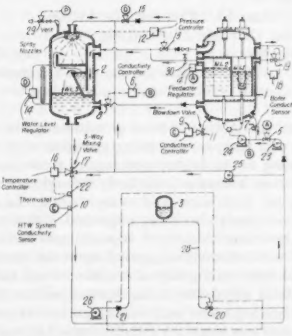


1. A thermal print head comprising:
a thermally stable and electrically insulating support mandrel means having a first longitudinal support edge between a pair of mandrel faces;
a plurality of spaced heating elements supported on said first support edge;
a plurality of electrical conductors electrically connected to said heating elements respectively with each heating element having a pair of electrical conductors attached thereto with each electrical conductor of each pair of said electrical conductors extending across and in contact with a corresponding one of said mandrel faces, and
retaining means for individually attaching each of said electrical conductors to said mandrel and for maintaining said spaced relationship of said heating elements.

3,862,395
HTW HEATING SYSTEMS HAVING ELECTRODE BOILERS AS THE SOURCE OF HTW

Milton Eaton, Shawinigan, Canada, assignor to General Electric Company, Shelbyville, Ind.

Filed Nov. 22, 1972, Ser. No. 308,734
Claims priority, application Canada, Nov. 23, 1971, 128409
Int. Cl. H05b *3/60;* **F22b** *1/16;* **F24d** *3/02*
U.S. Cl. 219—284 **3 Claims**



1. In an HTW space heating system in which an automatic electrode steam boiler having a feedwater regulator and a boiler steam pressure controller together with a direct contact steam heater having steam communication with the boiler steam outlet, a vent for non-condensable gases and HTW communication with the space heating system are used as the source of HTW which is circulated by pumping means through the space heating system, the improvement comprising
a. pumping means responsive to the said boiler feed-water regulator for diverting water from the heating system to the electrode steam boiler in which it is converted to steam at the set point pressure of the said boiler steam pressure controller, the water diverted from the heating system being replaced by HTW from the direct contact steam heater passing through the pipe forming the said HTW communication with the heating system under the steam pressure in the direct contact steam heater which functions as the heating system static pressure,
b. control valve means responsive to a temperature controller which measures the temperature of the water entering the heating system and causes water to be diverted from the heating system to the said direct contact steam heater in which it is heated and from which it is returned as HTW to the heating system as required to maintain the temperature of the water entering the heating system at the set point temperature of the said temperature controller,
c. a pipe connection between the water-containing zone of the electrode steam boiler and the HTW storage zone of the direct contact steam heater in which a control valve responsive to a boiler water conductivity controller is located, a blowdown pipe connection with the boiler in which a control valve responsive to a conductivity controller measuring the conductivity of the water circulated through the heating system is located and a make-up water connection with the direct contact steam heater through which the admission of make-up water having a lower conductivity than that of the boiler water is regulated by a control valve responsive to a controller which measures the water level in the said HTW storage zone of the direct contact steam heater, the said controllers with their associated control valves function to transfer boiler water (HTW) to the direct contact steam heater as required to return to the heating system soluble salts carried into the boiler by the boiler feedwater thereby maintaining normal boiler water conductivity and to blow down boiler water replaced with make-up water of a lower conductivity as required to limit the conductivity of the water circulated through the heating system.

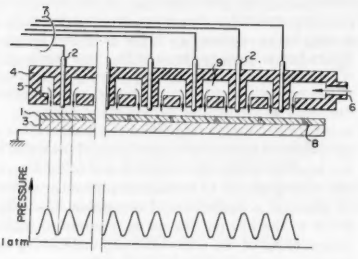
3,862,396
APPARATUS FOR MAKING PERFORATIONS IN SHEET MATERIAL BY ELECTRIC DISCHARGE

Chuichi Machida, Hasuda, and Kozo Tsuchida, Urawa, both of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo and Mishima Paper Manufacturing Co., Ltd., Chiyoda-ku, both of, Japan

Continuation-in-part of Ser. No. 334,082, Feb. 20, 1973, abandoned. This application Feb. 4, 1974, Ser. No. 439,424
Claims priority, application Japan, July 17, 1972, 47-70719
Int. Cl. H05b *7/18*
U.S. Cl. 219—384 **14 Claims**

1. An apparatus for the perforation of a sheet comprising a plurality of discharge electrodes electrically insulated from each other, a common grounded electrode opposite thereto, said discharge electrodes and common grounded electrode being arranged to allow the sheet to pass therebetween and effect discharge therebetween through the sheet to produce perforations in the sheet, annular nozzle means disposed around and surrounding each of said discharge electrodes, each of said annular nozzle means having their axes perpendicularly to the sheet surface, means for establishing a gas

stream, said nozzle means forming said gas stream in a direction perpendicular to the sheet surface, said gas stream passing between and around each of said discharge electrodes and the sheet to control perforation conditions.



3,862,397

COOL WALL RADIANTLY HEATED REACTOR

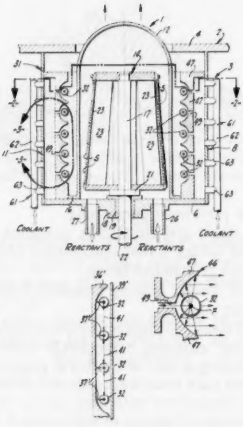
Emmett R. Anderson, Saratoga, and Douglas S. Schatz, Los Gatos, both of Canada, assignors to Applied Materials Technology, Inc., Santa Clara, Calif.

Continuation of Ser. No. 237,698, March 24, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 397,631

Int. Cl. H05b *1/00;* **F27b** *5/14;* **F21v** *29/00*

U.S. Cl. 219—405 **5 Claims**

1. A cool wall radiantly heated chemical vapor deposition reactor comprising in combination a plurality of banks of elongated radiant energy heat lamps for heating substrates to be treated in said reactor, each of said lamps including an elongated filament therein; a radiant energy transmissive cool wall reaction chamber in which said substrates are to be treated, said banks of lamps being oriented to generally surround said reaction chamber to transmit radiant energy through the wall thereof; a reflector assembly; for each bank comprising a plurality of adjacently disposed reflector segments; and cooling structure in conjunction with said reaction chamber and each of said lamp banks, said lamps of each bank being spaced from each other and from the wall of said reaction chamber with portions of adjacent segments of each reflector assembly being interposed between adjacent lamps to prevent direct transmission of radiant energy between the filaments of such adjacent lamps; each reflector assembly having the plurality of said reflector segments spaced from each other so that elongated generally slot shaped openings are provided between adjacent reflector segments, each of said lamps being positioned so that its elongated filament lies generally in line with one of said elongated openings, said openings being at least as wide as the width of said filaments and at least as long as the lenght of said filaments aligned therewith so that radiant energy passing in one direction from each said filament may exit length an adjacent opening so that reflection of said energy back toward said lamp filament is precluded; said cooling structure comprising dual purpose conduit means associated with each reflector assembly for introducing a coolant through said slot shaped openings of each reflector assembly, such coolant upon passing through such openings passing over each of said lamps in said bank positioned in line therewith to effect cooling of such lamps, and further passing over the wall of said reaction chamber to assist in maintaining such chamber wall cool during treatment of substrates in said reactor.



3,862,398

SAILBOAT RACING CALCULATOR

Richard E. Toscan, 26410 Birchfield Ave., Palos Verdes Peninsula, Calif. 90274

Filed Mar. 14, 1974, Ser. No. 451,067

Int. Cl. G06c *27/00;* **G06g** *1/08*

U.S. Cl. 235—61 NV **6 Claims**

1. A sailboat racing calculator for use with a compass and a boat speed indicator, said calculator comprising:

a body;

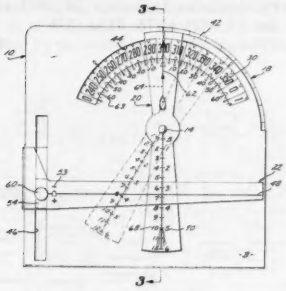
a compass dial rotatably supported on said body, the upper surface of said compass dial being provided with indicia corresponding to the degree markings of a compass;

a bearing window formed on said body through which may be viewed the indicia on said compass dial, the upper surface of said body also being imprinted with a radially extending boat-direction arrow adjacent said window;

a boat speed arm rotatably supported upon the upper surface of said body on the axis of rotation of said compass dial, said boat speed arm being formed with a radially extending bearing arrow and boat speed indicia; and

a speed read-out arm vertically slidably carried by said body overlying said boat speed arm and formed with a horizontally extending guideline that intersects the boat speed indicia on said boat speed arm, with the arrow of said body and the arrow of said boat speed arm cooperating

with the compass degree indicia of said compass dial and the guideline of said speed read-out arm cooperating with the boat speed indicia on the said boat speed arm to



provide information relative to obtaining the optimum combination of compass heading and boat speed by said sailboat.

3,862,399

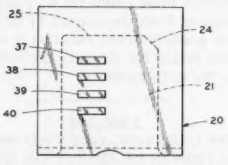
CARD READING METHOD AND APPARATUS

Jack C. Cain, 536 S. Waterman Ave., Arlington Heights, Ill. 60004

Filed Apr. 13, 1973, Ser. No. 350,818

Int. Cl. G06k *19/06, 7/08;* **H01h** *43/08*

U.S. Cl. 235—61.11 D **16 Claims**



1. In the combination of a card and a card reading device, the improvement comprising:

said device defining a way for receiving said card, said device including a reed switch positioned at one side of said way, said reed switch being closed when a magnetic field of a relatively strong strength condition is applied thereto and being open when a relatively weak magnetic field strength condition is applied thereto, said device including magnet means including a magnet mounted on the opposite side of said way, said card being positioned at a given location in said way, being mainly non-magnetic material and including magnetic material means of inconsequential residual magnetism, said magnetic material means being positioned between the magnet and the switch and intercepting the magnetic lines of force emanating from said magnet so that said magnetic means applies a magnetic field of one of said conditions to said reed switch, said card being removable from said way whereby said magnetic material means no longer intercepts the lines of force from said magnet and said magnetic means applies a magnetic field of the other of said conditions to said reed switch.

3,862,400

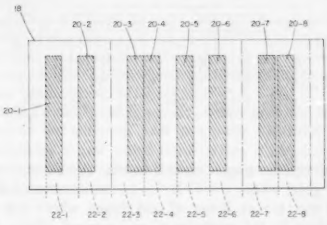
SENSING SYSTEM FOR BAR PATTERNS

Elihu Craig Thomson, Wellesley, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed Mar. 31, 1972, Ser. No. 240,147

Int. Cl. G06k *7/10*

U.S. Cl. 235—61.11 E **3 Claims**



1. Sensing apparatus for use with an article comprising

scanning means for producing electrical signals corresponding to code marks in a code on an article as the code is scanned along a path corresponding to the disposition of said code marks,

said code defining a series of equal width code mark receiving locations disposed in a single row,

each said code mark receiving location defining a digit space and having two positions within said digit space in which a code mark can be placed,

said code being of the binary type in which a code mark representing one binary digit is disposed in the lefthand half of the digit space and a code mark representing the other binary digit is disposed in the righthand half of the digit space and one and only one code mark detectable by said sensing apparatus is in each said digit space,

said code marks being of equal width and the position of each said code mark in its digit space defining the value of the digit of that digit space,

circuitry for selectively generating a signal corresponding to the time duration of a digit space interval, the time durations of said digit space intervals in said series being equal to one another,

means for generating a code-sampling gate at the position in each said digit space interval of a mark representing one of said two digits, and

means responsive to a code mark signal produced by said scanning means coincident with said one digit code-sampling gate for producing a first output and establishing a first timing interval corresponding to said digit space interval, and

responsive to the absence of a code mark signal coincident with said one digit code-sampling gate for establishing a second timing interval different from said first timing interval in response to a scanner signal corresponding to the start of the other binary digit whereby a code-sampling gate is generated at the same point in each digit space to facilitate reading of the code on the article.

3,862,401

MULTI-PHASE PULSE COUNTER

Dzintar Karlovich Zibin, ulitsa Kveles, 15, korpus 6, kv. 10, Riga, U.S.S.R.

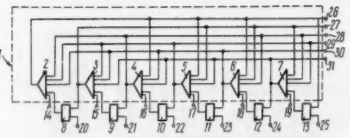
Filed Feb. 20, 1973, Ser. No. 333,465

Int. Cl. H03k *21/06*

U.S. Cl. 235—92 LG **2 Claims**

1. A multi-phase pulse counter comprising an n-stage, n-stable trigger circuit, where $n = 6, 7, 8 \ldots\ldots$, of which the stable states are represented as output signals in a binary code; said stages of said trigger circuit being made in the form of NOR logic elements; n logic gates formed also as NOR logic elements; said n-stage trigger circuit having the output of each

one of said stages thereof connected to the inputs of s other stages thereof, where $3 \quad s \quad n-3$; the output of each one of said gates being connected to the input of the respective one of said stages of said trigger circuit, the first input of each said gate being the respective count input of said counter, the second inputs of said gates being connected to the outputs of



said stages of said trigger circuit so that the second input of each k-th gate, where $k = 1, 2, 3, \ldots, n$, is connected to the output of the $(k + a)$-th one of said stages, where said sum $(k + a)$ is taken by the modulus n, and $a = -d$, where d is the smallest interval between those of said stages of said trigger circuit which are in a binary 1 state.

3,862,402

METHOD FOR COUNTING SHEETS OF PAPER AND APPARATUS

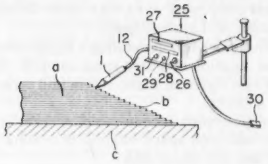
Takeo Igarashi, and Tadao Takeuthi, both of Tokyo, Japan, assignors to Dai Nippon Printing Company Limited, Tokyo, Japan

Filed July 30, 1973, Ser. No. 384,144

Claims priority, application Japan, July 29, 1972, 47-76104; June 5, 1973, 48-63187

Int. Cl. G06m 9/00

U.S. Cl. 235—92 SB **6 Claims**



1. An apparatus for counting a number of piled up sheets of paper comprising:

a sensing device having a case, a probe disposed oscillatably within said case and with the foremost end of said probe projecting outwardly from the case, and a piezo electric element disposed in said case, said piezo electric element being connected to said probe so as to generate an electric signal due to oscillation of said probe, said probe being resilient, said piezo electric element being positioned parallel with the probe with a predetermined space therebetween, an intervening cushion rubber connecting the foremost end of said piezo electric element to an intermediate portion of said probe, said probe and piezo electric element both having base end portions, said base end portions being fixedly attached to each other at a fixing point, spaced supporting members in said case, said base end portions being elastically supported by one said supporting member at said fixing point, said probe including a portion slightly offset from said intermediate probe portion toward said foremost probe end and elastically supported by the other said supporting member; and

an electronic counter connected with said sensing device to count signals transmitted from said piezo electric element in order to indicate figures for the counted number of sheets.

3,862,403

PLANT OPTIMIZING CONTROL DEVICE

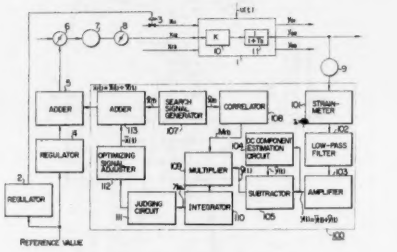
Nobuo Kurihara, Hitachiota, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 16, 1974, Ser. No. 461,344

Claims priority, application Japan, Apr. 20, 1973, 48-44171

Int. Cl. F22b 35/18; F23n 3/00

U.S. Cl. 235—150.1 **8 Claims**



1. A plant optimizing control device in which a slight variation is caused in the input by applying a search signal to the input and the preset value of the input is adjusted on the basis of an optimizing signal so as to cause the operating point of the plant to give an optimum point by measuring the variation in the output corresponding to the variation in the input, the device comprising a first means for generating a periodical signal consisting of pseudo-random binary signals and serving as the search signal; a second means for obtaining a correlating signal with respect to the input and output of the plant, from a running mean within a period of the signal of the first means, the running mean being made in accordance with the expected plant characteristic; a third means for detecting the output of the plant, estimating from the detected value a dc component corresponding to the optimizing signal and obtaining a signal corresponding to the search signal which is equivalent to the detected value minus the dc component; a fourth means for obtaining from the outputs of the second and the third means the gradient of the variation in the output of the plant; and a fifth means for obtaining the optimizing signal of the plant from the forth means.

3,862,404

DEVICE FOR CARRYING OUT TWO-DIMENSIONAL INTERPOLATION IN CONJUNCTION WITH A FIXED WORD STORE

Volkmar Fiedrich, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 23, 1974, Ser. No. 435,852

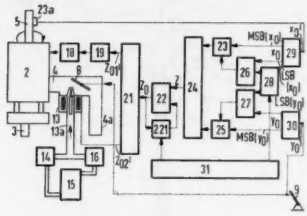
Claims priority, application Germany, May 25, 1973, 2326851; Jan. 23, 1973, 2303182

Int. Cl. F02d 5/00; G06f 7/38

U.S. Cl. 235—152 **8 Claims**

1. A device for carrying out multi-dimensional interpolation in response to coordinate digital input words x_e, y_e each having higher value bits MSB (x_a), MSB, (y_a) which are used to characterize a support value with the next lower abscissa and ordinate, respectively, and lower value bits LSB (x_a), LSB (y_a) for use in interpolating between four adjacent support values; a fixed value store; a pair of selector circuits for receiving respective one of the digital input words and feeding the address inputs of said fixed value store in response to receipt of control signals, said selector circuits operable to optionally feed the number represented by the higher value bits directly to said store or to provide the digital number in each case increased by 1; a counter having as many bits as the number of lower value bits of said two input words together and operating consecutively through each counting position during a calculating cycle; a pair of test circuits for the respective input

words x_o, y_o for comparing the low value bits of the respective words with numbers ξ and η represented by assigned bits of the counter and operable whenever a number represented by the count is higher than a number represented by the lower value bits of an input word to operate the respective selector circuits to feed the higher value bits MSB (x_o), MSB (y_o) directly to said fixed word store, and whenever a number represented by the count is less than the number represented



by the lower value bits of an input word the number is increased by 1 and fed to said fixed word store; a register; an adder circuit connected to said fixed word store to add the individual function values therefrom and transfer the addition to said register which is erased at the beginning of a calculating cycle; and means for controlling said adder circuit and transfer of information to said register, the interpolated information being stored in said register upon completion of operation of said counter through all of its counting positions.

3,862,405

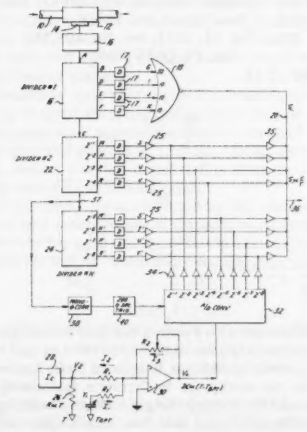
PARAMETER COMPENSATING CIRCUIT FOR FLOW METER

Edwin J. Beck, Bricktown, N.J., assignor to H-B Industries Inc., Port Monmouth, N.J.

Filed Apr. 5, 1973, Ser. No. 348,265

Int. Cl. G01f 15/02

U.S. Cl. 235—151.34 **12 Claims**



1. A method of (1) metering the volumetric flow of a fluid, wherein the flow is represented by a pulse train having a frequency corresponding to the fluid flow rate, and of (2) normalizing said frequency to a predetermined reference parameter to compensate for gravimetric changes in said fluid, wherein the steps comprise:

a. dividing said pulse train into two subtrains;

b. applying the output of one of said subtrains to an "N" stage binary divider;

c. electronically comparing the corresponding parameter of said fluid to said predetermined reference parameter;

d. generating an analog voltage that is proportional to the difference between said parameters;

e. applying said voltage to an "N" stage analog-to-digital converter;

f. applying the stage-by-stage output of said converter to each of the corresponding output stages of said binary divider, so as to inhibit the output of the binary stages in a manner that is directly proportional to the magnitude of said parameter difference; and

g. adding the remaining pulses of said inhibited binary output to the other of said two pulse subtrains, whereby obtaining a new pulse train having a frequency that is gravimetrically compensated to the predetermined reference parameter.

3,862,406

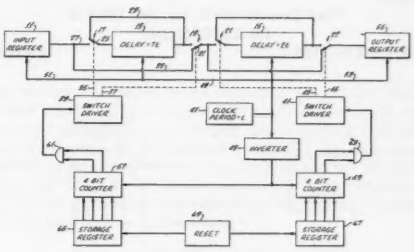
DATA REORDERING SYSTEM

Billy S. Brooks, Tustin, Calif., assignor to Interstate Electronics Corporation, Anaheim, Calif.

Filed Nov. 12, 1973, Ser. No. 415,177

Int. Cl. G06f 5/00

U.S. Cl. 235—152 **8 Claims**



1. A circuit for reordering a set of N input coefficients stored in a serial access input register in reverse binary order to normal binary order in a serial access output register, comprising:

means for clocking data from said input register and into said output register, said clocking means having a period t;

a plurality of delay circuits having progressively decreasing delay periods, said delay periods equal to $(N/2-1)t$, $(N/4-2)t$, $(N/8-4)t$, etc.; and

a plurality of switching means connecting each circuit stage including said delay circuits and said input and output registers in series, said switching means alternately having:

a. an A position connecting coefficients received from the preceding circuit stage to said delay circuit and coefficients from said delay circuit to the succeeding circuit stage, or

b. a B position connecting coefficients received from the preceding circuit stage to the succeeding circuit stage and coefficients from said delay circuit for recirculation through said delay circuit; and means for driving said switching means between said

A and B positions in a predetermined sequence as follows:

a. for the switching means associated with said $(N/2-1)t$ delay, said switching means are maintained in said A position for a period of $(N/2)t$, then switched in a sequence B,A,B,A,B . . ., remaining in each position for a period t, until a period of $(N/2)t$ has elapsed, then repeat the sequence, beginning with the A position for a period of $(N/2)t$;

b. for the switching means associated with said $(N/4-2)t$ delay, said switching means are maintained in said A position for a period of $(N/4)t$, then switched in a sequence B,B,A,A,B,B,A,A . . . , remaining in each position for a period t, until a period of $(N/4)t$ has elapsed, then repeat the sequence, beginning with the A position for a period of $(N/4)t$;

c. for the switching means associated with said $(N/8-4)t$ delay, said switching means are maintained in said A position for a period of $(N/8)t$, then switched in a sequence B,B,B,B,A,A,A,A,B,B,B,B . . . , remaining in each position for a period t, until a period of $(N/8)t$ has elapsed, then repeat the sequence, beginning with A position for a period of $(N/8)t$;

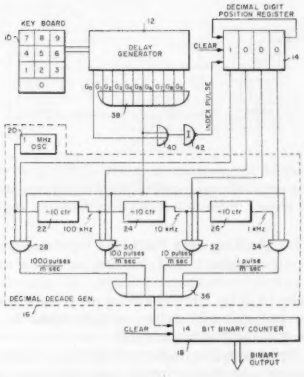
d. and, following the same progressive order, decreasing the period for maintenance in the A position and the B to A switching sequence by a factor of two for each successive delay circuit and increasing the duration of the B and A positions during the switching sequence by a factor of two for each successive delay circuit, for each of the remaining delay circuits.

3,862,407

DECIMAL TO BINARY CONVERTER

Richard K. Baldauf, Greenbelt, Md., and Lawrence M. Leibowitz, Fairfax, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 23, 1970, Ser. No. 100,933
Int. Cl. G06f 3/02
U.S. Cl. 235—155 **2 Claims**



1. A decimal number to natural binary number converter comprising:

input means for sequentially entering a decimal number to be converted;

means coupled to said input means for generating sequential trains of pulses the number of pulses in each of said trains of pulses being equivalent to one of the decimal digits of said decimal number, said generating means including at least two pulse generators whose output frequencies are related by a decimal multiple of ten and the output of each of said pulse generators being representative of a different significant digit of said decimal number;

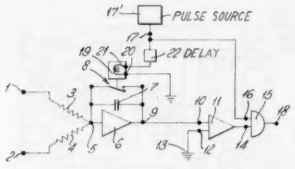
binary adding means coupled to said generating means for totaling all the pulses in each of said trains of pulses, wherein the totaled number is the binary equivalent to said decimal number entered into said input means.

3,862,408

DEVICES FOR MEAN VALUE INDICATION

Reginald Charles Bolt, London, England, assignor to Molins Limited, London, England

Filed Nov. 14, 1972, Ser. No. 306,425
Claims priority, application Great Britain, Nov. 17, 1971, 53338/71
Int. Cl. G06g 7/18
U.S. Cl. 235—183 **8 Claims**



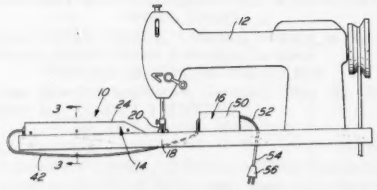
1. A device for producing an indication whenever the mean value over each of a succession of defined periods of a continuously varying voltage is beyond a selected limit, said device comprising an integrator, input circuit means for said integrator connected to receive both said continuously varying voltage and a reference voltage representing said selected limit to deliver continuously to said integrator a voltage which at any instant is proportional to the algebraic sum of the two received voltages, a level discriminator connected to the output of said integrator, a normally closed two-input AND gate having one input connected to the output of said discriminator, and a source of electric pulses connected to the other input of said gate to open said gate briefly at the end of each of said defined periods, and reset means connected to said source of electric pulses and to said integrator to reset said integrator to zero immediately after completion of each brief opening of said gate.

3,862,409

LIGHTED TABLE FOR THE USE WITH SEWING MACHINES

Thomas Joella, Delaboe, Bangor, Pa. 18013, and Robert Mickus, R.D. 2, New Tripoli, Pa. 18066

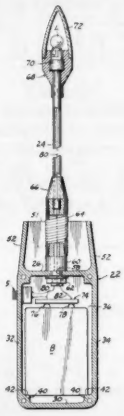
Filed Oct. 11, 1973, Ser. No. 405,351
Int. Cl. D05b 79/00
U.S. Cl. 240—2.14 **1 Claim**



1. In combination with a sewing machine including a needle, a table for supporting a workpiece to be sewn by said machine, said table providing light to illuminate from below indicia apertures in the workpiece to facilitate the sewing of said workpiece, said table comprising a reflective base, light emitting means disposed over said base and a light transmitting cover disposed over said light emitting means, said cover diffusing the light produced by the light emitting means, said cover being adapted to support said workpiece directly thereon and including a generally planar top and at least one sidewall extending downward at an angle to said top, said table being positioned closely adjacent the sewing machine with a downwardly extending sidewall of said cover pointing toward

said needle to facilitate the removal of the workpiece from the table and its insertion under the needle.

3,862,410
BICYCLE WARNING LIGHT
John H. Maxwell, Shawnee, Okla., assignor to Maxetron Industries, Inc., Lawton, Okla.
Filed Oct. 25, 1973, Ser. No. 409,546
Int. Cl. B62j *5/00*
U.S. Cl. 240—7.55 **3 Claims**



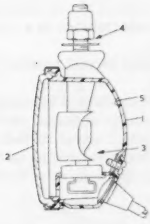
1. A warning light for a bicycle having an axle, comprising:
a casing having top, bottom and side walls joined to a back wall for forming a chamber,
a battery within said chamber,
a front wall forming a lid for opening and closing the chamber,
said lid having an innersurface with a lip thereon normally overlapping a marginal edge portion of said battery for preventing movement of said battery with respect to the innersurfaces of the casing walls forming the chamber,
said back wall having an aperture for receiving one end portion of said axle;
an upstanding generally cylindrical self-supporting coil spring secured at its depending end with said casing;
an elongated mast coaxially secured at one end portion, to the other end portion of said coil spring; and,
socket means, adapted to receive a lamp, secured to the other end portion of said mast,
said coil spring being deflected by the mass of said mast and said socket means in response to movement of said bicycle for generating lateral movement of said mast with respect to its normally vertical axis.

3,862,411
APPARATUS FOR OUTDOOR LIGHTING, ESPECIALLY FOR TRAFFIC SIGNS
Leonard Per Anders Persson, Kungsholms Strand 169, Stockholm, Sweden
Continuation of Ser. No. 152,348, June 11, 1971, abandoned.
This application Oct. 9, 1973, Ser. No. 404,623
Int. Cl. F21v *23/02*, *25/00*
U.S. Cl. 240—25 **1 Claim**

1. In an outdoor lighting apparatus, comprising a high voltage light source, a vertical lamp post, ground foundation means supporting said lamp post, first transformer means protectively located inside said ground foundation means, second transformer means located near the top of said lamp post in close proximity to said high voltage light source, a main voltage underground cable connected to a primary winding of said first transformer means, first connecting means inside said lamp post and connecting a secondary winding of said first transformer means to a winding of said second transformer means, and second connecting means connecting a winding of said second transformer means to said high voltage

light source, the improvement consisting of said first transformer means being a step down transformer wherein said primary winding is completely and safely insulated from said secondary winding, the induced voltage in said secondary winding being typically from 15 to 30 volts and not above 48 volts and said second transformer means being capable of transforming low induced voltage to the high voltage required for said high voltage light source.

3,862,412
LAMP REFLECTORS
John Henry Postans, Birmingham, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England
Continuation of Ser. No. 291,532, Sept. 25, 1972, abandoned.
This application Jan. 16, 1974, Ser. No. 433,701
Claims priority, application Great Britain, Sept. 24, 1971, 44567/71; Apr. 15, 1972, 17488/72
Int. Cl. F21v *7/00*
U.S. Cl. 240—103 R **5 Claims**



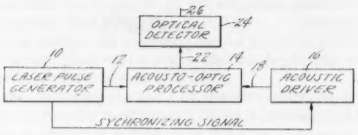
1. A driving lamp reflector comprising a hollow body, one surface of said body being provided with a reflective material to render said surface reflective, and said body being injection moulded from a cured, low profile polyester, thermosetting moulding composition containing between 12 percent and 18 percent glass fibre by weight of said composition.

3,862,413

APPARATUS FOR PROVIDING PULSES HAVING ELECTRONICALLY VARIABLE CHARACTERISTICS

Michael J. Brienza, Westport, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 15, 1972, Ser. No. 315,716
Int. Cl. H04b 9/00
U.S. Cl. 250—199 **7 Claims**



1. An optically variable pulse generation system in which input pulses of polarized laser energy are scattered from pulses of acoustic energy to provide output pulses of optical energy which are orthogonally polarized with respect to, and travel in a direction opposite to the input optical pulses, the output pulses having selectably variable intensity profiles and durations in the subnanosecond range, the system comprising:

acousto-optic means including a length of an acousto-optic medium which is optically anisotropic and has a longitudinal axis extending along its length;

means for providing polarized pulsed electromagnetic radiation which is the source of input laser energy and which is aligned so that the input laser energy passes through the medium along the longitudinal axis;

means for providing RF electric signals having selectively variable frequency intensity and duration characteristics; and

means responsive to the RF electric signals for providing continuously variable acoustic signals which propagate internal of the medium along the longitudinal axis, the acoustic signal means being fixedly attached to the medium.

3,862,414

MATERIAL DISPENSER CONTROL CIRCUIT WITH FALSE TRIGGER PREVENTION

Harvey R. Algeri, North Olmstead, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Jan. 17, 1974, Ser. No. 434,034
Int. Cl. H01j 39/12
U.S. Cl. 250—206 **7 Claims**

1. A control circuit for energizing an electromechanical actuator to operate a valve in a material dispensing mode in response to interruption of a light beam occurring in timed relation to movement of an article past a dispenser associated with said valve, said control circuit comprising:

a rectifier circuit connectable to an a.c. source for providing rectified current,

a capacitor connected to said rectifier for smoothing said rectified current,

an electronic switch connected between said capacitor and said electromechanical actuator, said switch operable in response to a control signal to switch to a conductive condition to facilitiate energizing said electromechanical actuator for operating said valve to dispense material to said article,

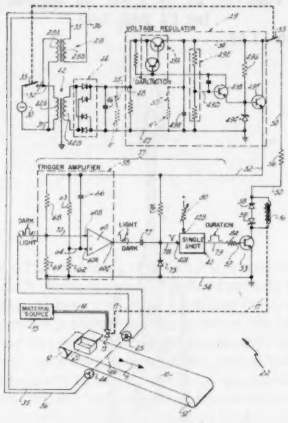
a phototransducer,

a lamp energizable to direct a light beam to said phototransducer,

first switch means connecting said lamp and said rectifier to said a.c. source for selectively energizing said lamp and rectifier when actuated,

a detector circuit connected between said phototransducer and said electronic switch for providing, in response to a decrease in light incident on said phototransducer, a control signal to said electronic switch for switching it to said conductive condition to facilitate energizing said electromechanical actuator for operating said valve to dispense material to said article, and

second switch means connected in series with said electromechanical actuator and said electronic switch, said



second switch means being jointly actuable with said first switch means to prevent energization of said electromechanical actuator by energy stored in said capacitor when said electronic switch is rendered conductive by a control signal produced by said detector when said first switch is de-actuated and said lamp deenergized, reducing the light incident on said phototransducer.

3,862,415

OPTO-ELECTRONIC OBJECT DETECTOR USING SEMICONDUCTOR LIGHT SOURCE

John D. Harnden, Jr., and William P. Kornrumpf, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 31, 1972, Ser. No. 302,523
Int. Cl. G06m 7/00
U.S. Cl. 250—221 **11 Claims**

1. An active opto-electronic transducer comprising:

a base member;

an optical barrier member having first and second sides, said barrier member being disposed on said base member and generally perpendicular thereto;

a semiconductor light source disposed adjacent said first side of said optical barrier member;

a photo-responsive device disposed adjacent said second side of said optical barrier member;

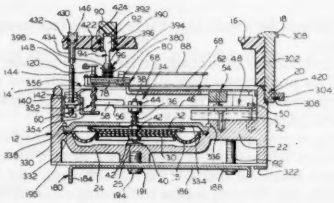
first and second support means for supporting respectively said semiconductor light source and said photo-responsive device in spaced apart relation to said base member, said second support means supporting said photoresponsive device at a greater distance from said base member than the distance from said base member at which said semiconductor light source is supported by said first support means; and

means for receiving an electrical output from said photo-responsive device, said electrical output being in a first state when said photo-responsive device is illuminated and in a second state when said photo-responsive device is not illuminated.

3,862,416
PRESSURE INDICATOR AND SWITCH

James W. Phillips, Michigan City, and Richard S. Zoludow, South Bend, both of Ind., assignors to Dwyer Instruments, Inc., Michigan City, Ind.

Filed Mar. 22, 1974, Ser. No. 453,887
Int. Cl. G01d *5/32*
U.S. Cl. 250—231 P **13 Claims**



1. In a combination pressure gauge and switch having a housing journaling a helix bearing an indicator arm movable therewith for cooperation with scale indicia facing outwardly of the housing, means for moving said helix in accordance with pressures sensed by the gauge, a pivotally mounted set point indicator arm cooperating with the scale indicia, a photocell movable with the set point arm and positioned to be exposed to a light source adjacent the helix for rendering same electrically conductive and to be shielded from same by a light shield movable with the helix at a predetermined position of the set point arm relative to the scale indicia whereby the cell is non conductive, and electrical circuit means including said light source and said photocell for utilizing the position of the indicator arm relative to said set point arm to activate and deactivate an electrical relay coil, the improvement wherein:

said light source is aligned with the axis of said helix,

said light shield being movable about said helix axis and being shaped to be concentric therewith,

said circuit means including first and second switching semiconductors,

one of said semiconductors being in circuit controlling relation with said coil and the other of said transistors being in bias controlling relation to the first transistor,

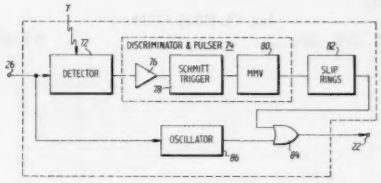
and means connecting said second transistor to a dual polarity direct current power supply,

said photocell being electrically interposed in said connecting means to change the bias application to the second transistor in accordance with the exposure or shielding of the photocell with reference to the light source.

3,862,417
DUAL FUNCTION LOGGING TOOL AND METHOD

John G. Kampfer, Houston, Tex., assignor to Halliburton Co., Duncan, Okla.

Filed July 23, 1973, Ser. No. 381,474
Int. Cl. G01t *1/16*
U.S. Cl. 250—263 **7 Claims**



1. In a system including a logging tool having a radiation detector for hydrocarbons and for naturally occurring radiation in which the hydrocarbon information and reference pulses as well as natural radiation information are transmitted uphole by means of a single logging cable, the method of avoiding mutual interference comprising the steps of:

a. providing a first series of periodic pulses;

b. providing a second series of pulses related in occurrence to the detection of natural radiation;

c. providing constant amplitude reference pulses to the logging cable responsively to each pulse in the first and in the second series of pulses;

d. providing a third series of pulses related to hydrocarbon detection to the logging cable, the amplitude of the pulses in the third series of pulses being less than the amplitude of the reference pulses;

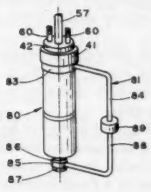
e. separating the reference pulses from the pulses in the third series of pulses at the surface on the basis of the amplitude thereof; and,

f. subtracting from the reference pulses a number of pulses related to the number of pulses in the first series of pulses to thereby provide a series of pulses related in number to the detected natural radiation.

3,862,418
APPARATUS AND METHOD FOR USING THE SAME TO ASCERTAIN THE ANGULAR POSITION OF A DISCONTINUITY IN THE MEDIUM SURROUNDING A TEST BORE

Kenneth Preiss, 16 Rottem St., Omer, Israel

Filed Nov. 12, 1973, Ser. No. 414,625
Claims priority, application Israel, Nov. 15, 1972, 40846
Int. Cl. G01t *1/16*
U.S. Cl. 250—267 **12 Claims**

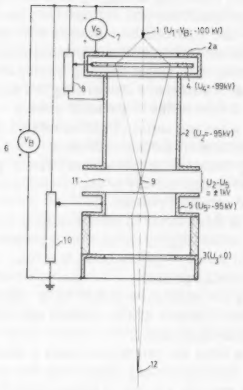


6. Apparatus according to claim **5** wherein the window is defined by a longitudinally extending slot in a radiation absorbing medium that extends circumferentially through less than 180° of arc.

3,862,419
ELECTRON-BEAM ILLUMINATING SYSTEM FOR AN ELECTRICAL APPARATUS SUCH AS AN ELECTRON MICROSCOPE OR THE LIKE

Lee Veneklasen, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed June 25, 1973, Ser. No. 373,415
Claims priority, application Germany, July 10, 1972, 2234381
Int. Cl. H01j *37/26*
U.S. Cl. 250—306 5 Claims



1. An electron-beam illuminating system for an electrical apparatus such as an electron microscope comprising

a cathode constituting a source for supplying the electron making up the electron beam;

a first anode disposed adjacent said cathode and defining therewith a beam axis extending in the beam direction;

first anode voltage supply means for supplying a positive bias voltage to said first anode for determining the emission of said cathode;

an acceleration anode disposed beyond said first anode along the beam axis and defining an acceleration path for the electrons emitted by said cathode;

acceleration voltage supply means for establishing an acceleration voltage across said cathode and said accelerating anode;

a further electrode disposed between said first anode and said acceleration anode, said further electrode and said first anode conjointly defining a space therebetween along the beam axis;

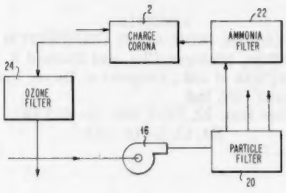
an auxiliary lens disposed along the beam axis between said cathode and said acceleration anode for generating a first image of said source in said space at the input of said acceleration path at a fixed location along the beam axis, said further electrode and said acceleration anode conjointly defining a further lens for imaging said first image of said source; and

circuit means for supplying to said further electrode a voltage linearly proportional to said acceleration voltage and taken with reference to the potential on said acceleration anode.

3,862,420
SYSTEM TO PREVENT THE FORMATION OF PARTICULATE MATERIAL IN CORONA UNITS

Willard K. Banks, Santa Clara, and Robert J. Cappell, Mountain View, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1973, Ser. No. 411,987
Int. Cl. G03g *15/00*
U.S. Cl. 250—324 15 Claims



1. Apparatus for producing charge on a surface comprising; comprising:

corona means for producing a charge on a surface;

means for producing a flow of air having undesired gaseous components therein to and through said corona means over a predetermined path;

filtering means positioned in said predetetermined path between said means for producing a flow of air and said corona means so that said air flows through said filtering means, said filtering means comprising a carrier material treated with an acid to form a chemically active material to produce a chemical reaction with certain of said undesired gaseous components in said flow of air to prevent the formation of particulate material in said corona means over an extended period of operation.

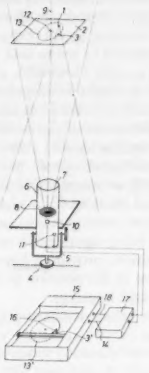
3,862,421
METHOD FOR PRODUCING AT A DISTANCE A REPRESENTATION OF THE PATH OF A POINT OF A STRUCTURE AND DEVICE FOR CARRYING OUT SAID METHOD

Jean Pierre Bezerie, Ville D'Avray, France, assignor to Societe Anonyme De Telecommunications, Paris, France

Filed June 8, 1973, Ser. No. 368,189
Claims priority, application France, June 23, 1972, 72.22793
Int. Cl. G01j *1/04*
U.S. Cl. 250—330 3 Claims

1. A method for producing at a distance a representation of the path of a point of a structure, comprising the steps of materialising the point to be observed by a source of infra-red radiation, observing the structure by means of a device for analysing the infra-red image of the source, which device comprises an infra-red analysing head including an infra-red objective, a mechanical modulator undergoing in a plane perpendicular to the optical axis a movement of circular translation and a detecting cell placed at the focus of said objective, said device being oriented in such manner that the optical axis of said objective is substantially perpendicular to the known osculating plane of the path of the point and intersects said plane in the region of displacement of the point, sending the electric current detected by said analysing device to an electronic device which produces from said detected current two

direct voltages which represent the Cartesian co-ordinates of the instantaneous image of the source in a reference system



pertaining to the analysing device, and furnishing said two voltages to a receiving device.

3,862,422

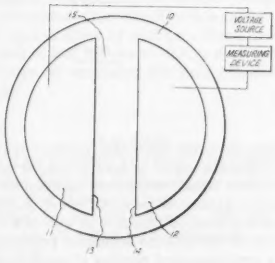
METHOD OF OPERATION OF PHOTOCONDUCTIVE VARISTOR

Herbert R. Philipp, Scotia, and Lionel M. Levinson, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,346

Int. Cl. G01t 1/16

U.S. Cl. 250—338 **7 Claims**



1. A method of operating a photoconductive varistor having a first pair of electrodes disposed on a face of a body of polycrystalline varistor material, said electrodes having a gap therebetween, said method comprising the steps of:

applyling an electrical potential between said electrodes, said potential being preselected to determine the sensitivity and magnitude of photocurrent of said photoconductive varistor;

positioning said photoconductive varistor to receive energy to be detected; and

receiving, in a utilization device, an electrical current flowing between said electrodes across said gap, said current being proportional to said potential and to the intensity of said energy;

the ratio of said photocurrent plus dark current to dark current being inversely proportional to said potential.

3,862,423

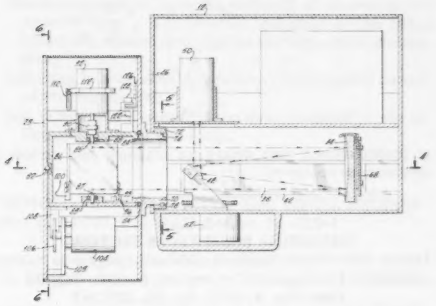
SCANNING THERMOGRAPHY

Albert F. Kutas, 18451 Durfee Cir., Villa Park, Calif. 92667, and Demetro U. Tokaruk, 2219 S. Shelton, Santa Ana, Calif. 92647

Filed June 11, 1973, Ser. No. 368,992

Int. Cl. G01t 1/00

U.S. Cl. 250—347 **26 Claims**



1. Radiant energy scanning apparatus comprising

a fixed housing including

an input port for receiving radiant energy incoming along an energy receiving axis,

a sensor for providing an output signal indicative of received radiant energy, and

means for collecting energy received at said input port and focusing such energy upon said sensor,

a scanning head assembly comprising

a scanning head housing,

a radiant energy output port in said scanning head housing aligned with said radiant energy input port of said fixed housing,

a rotatable support journalled in said scanning head housing on said energy receiving axis,

a reflector journalled in said rotatable support about a second axis normal to said energy receiving axis, said reflector including radiant energy reflective means for receiving energy projected toward said scanning head housing along a viewing axis and reflecting said energy through said output port and into said fixed housing input port, and

means for mounting said scanning head housing to said fixed housing for angular motion about an axis aligned with the energy receiving axis of said fixed housing.

3,862,424

OPTO-ELECTRONIC METHOD FOR THE SCANNING OF TERRAIN PROFILES AND A SWITCHING ARRANGEMENT FOR EFFECTING THE METHOD

Konrad Abel, Ketsch; Hans Seibecker, Baiertal, and Guenter Wichmann, Leimen, all of Germany, assignors to Eltro GmbH, Heidelberg, Germany

Filed Oct. 11, 1973, Ser. No. 405,656

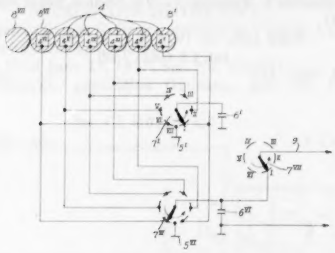
Claims priority, application Germany, Oct. 13, 1972, 2250251

Int. Cl. G01t 1/16

U.S. Cl. 250—349 **15 Claims**

1. In an opto-electronic method for the scanning of terrain profiles and the plotting of the temperature distribution over terrain sectors, including the forming of a tmeperature-entropy diagram with the aid of a line scanning detector arrangement, the improvement comprising; arranging a plurality of separate detector elements to extend in parallel with the

scanning direction across said terrain sectors; and effecting operative connections between individual detector elements



at predetermined time delays for scanning said sectors in synchronous sequence.

3,862,425

RADIATION POSITION DETECTORS

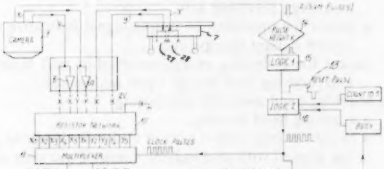
Melvyn John Myers, Balmedie, Scotland, assignor to National Research Development Corporation, London, England

Filed Mar. 5, 1973, Ser. No. 338,262

Claims priority, application Great Britain, Mar. 8, 1972, 10798/72

Int. Cl. G01t *1/20*

U.S. Cl. 250—366 **11 Claims**



1. A radiation position detecting device having a collimator for collimating radiation, means for deriving electrical signals representing the co-ordinates of the collimated radiation, means for deriving a signal representing the co-ordinates of the focal point of the collimator, means for compensating the received radiation signal by multiplication of the latter by a constant representing the distance between a selected plane parallel to the focal plane of the collimator and the focal plane itself, and the distance between the focal plane and the plane in which the collimated radiation is detected; and means for combining the co-ordinate signals of the focal point of the collimator with the received radiation signals so that the resultant signals are corrected to give the true co-ordinates of any events occurring in the selected plane.

3,862,426

ELECTRONICALLY CONTROLLED SPOT FILM DEVICE

Eugene P. Thomas, Baltimore, Md., assignor to CGR Medical Corporation, Baltimore, Md.

Filed Nov. 21, 1973, Ser. No. 418,115

Int. Cl. G03b *41/16*

U.S. Cl. 250—402 **13 Claims**

1. An electronically controlled spot film device utilized in connection with diagnostic X-ray apparatus and being adapted to selectively control the motion and position of an X-ray cassette, the position of a radiographic grid, the selection of the correct positional combination of a pair of radiographic masks, the initiation of an X-ray exposure and activating an analog display of the exposed X-ray film areas, wherein the improvement comprises:

a spot film housing;

a rectilinearly movable assembly located in said housing and being adapted to support an X-ray film cassette;

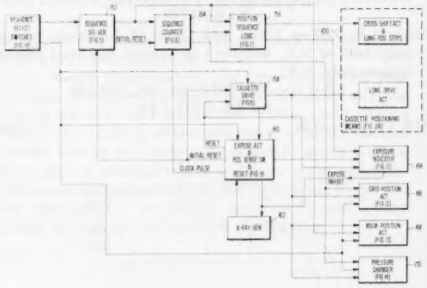
binary digital electrical signal responsive assembly positioning means adapted to move said assembly independently in first, for example cross-shift, and second, for example longitudinal, mutually orthogonal directions within said housing and stop at selected locations in each direction in response to electronically generated binary digital electrical control signals applied thereto for moving said cassette into and out of one or more X-ray exposure positions in a predetermined sequence as well as loading and unloading said cassette from said housing;

assembly position sensing means selectively located in said housing and being operated in response to assembly motion and position, providing binary digital electrical signals indicative of the position at any point in time of said assembly in said housing;

operation mode selector means providing a predetermined binary digital electrical output signal when activated to select a desired operating sequence of a plurality of operating sequences of said spot film device; and

an electronic control circuit including,

a. a digital sequence binary signal generator circuit coupled to said operation mode selector means, being responsive to said electrical output signal from said selector means to program and generate binary signals corresponding to the selected sequence;



b. a binary electronic sequence counter circuit coupled to said sequence signal generator circuit and receiving said binary signals therefrom, additionally receiving a remotely generated indexing count pulse after each actual and skipped exposure as well as a reset pulse at the end of the selected sequence, providing as an output a predetermined number of sequential binary signals in accordance with the selected operating sequence;

c. a binary electronic position sequence logic circuit coupled to said sequence binary signal generator circuit and said binary electronic counter circuit and receiving selected binary output signals therefrom to generate predetermined electrical control signals coupled to said assembly positioning means for causing selective movement of said assembly in said first orthogonal direction and for causing selective stoppage of movement of said assembly in said second orthogonal direction; and

d. binary electronic second orthogonal direction drive circuit means coupled both to said operation mode selector means and said assembly position sensing means, additionally receiving a reset signal after a selected sequence and being operable in response to binary signals from said drive circuit means and said

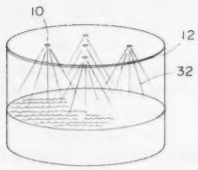
position sensing means to generate a control signal coupled to said assembly positioning means for causing movement of said assembly in said second orthogonal direction limited to the selective stoppage effected by control signals from said position sequence logic circuit coupled to said assembly positioning means.

3,862,427

APPARATUS AND METHOD FOR DIMINISHING ELECTRIC FIELDS WITHIN CONTAINERS OF FLAMMABLE MATERIAL

John G. Trump, Winchester, Mass., assignor to High Voltage Engineering Corporation, Burlington, Mass.

Filed Sept. 7, 1973, Ser. No. 395,042
Int. Cl. H01j *37/00*
U.S. Cl. 250—494 **17 Claims**



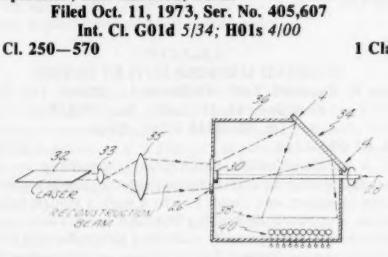
1. Apparatus for diminishing to spark-free levels the intensity of unwanted electric fields within the gaseous spaces of large containers of flammable liquids and gases including: at least one container housing a vaporizable liquid subject to accumulation of unwanted charge of one polarity and its vapor, a plurality of modular X-ray sources, each source including a high voltage generator, an electron accelerating tube and a grounded anode X-ray target, said plurality of sources being distributed in an array on the upper surface of said container, means for supplying electric power to said sources to maintain them in operation during extended periods when electrostatic hazards exist, said X-rays emerging from said sources into the interior of said container as wide angle beams to produce free ions of both polarities throughout said gaseous spaces, those of said ions which have a polarity opposite to that of said unwanted charge moving toward said unwanted charge to neutralize the field effects of said unwanted charge.

3,862,428

HOLOGRAPHIC SPATIAL ENCODER

James P. Waters, Rockville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 11, 1973, Ser. No. 405,607
Int. Cl. G01d *5/34*; **H01s** *4/00*
U.S. Cl. 250—570 **1 Claim**



1. A method for producing discrete digital output data indicative of the position of rotatable shaft comprising the steps of

producing a first optical encoder disk having binary information coded thereon in the form of opaque and transparent portions,

photoreducing said optical encoder disk to produce a second optical encoder disk of reduced diameter from said first optical encoder disk,

forming on an annular photographic plate a holographic image of said second optical encoder disk, said photographic plate being of reduced diameter from said first and second optical encoder disks,

developing said photographic plate,

mounting said photographic plate on a rotatable shaft for rotation therewith,

illuminating said photographic plate with a coherent optical beam to form a reconstructed real image of the coded binary information contained on said first optical encoder disk,

reflecting from an elliptical mirror a selected radial portion of said real image,

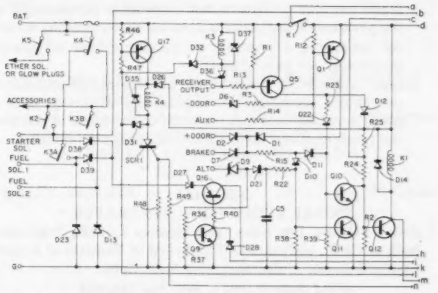
and detecting the coded information contained in the reflected portion of said image.

3,862,429

REMOTE STARTING SYSTEM FOR DIESEL ENGINES

Jeffry C. Bucher, R.D. No. 1, Aspers, Pa. 17304

Filed Feb. 14, 1973, Ser. No. 332,246
Int. Cl. F02n *11/08*, *11/10*
U.S. Cl. 290—37 **11 Claims**



1. A system for starting, from a remote location, a diesel engine having an electric starter motor, an electric generating device and a source of electric potential associated therewith, said system comprising:

an energizing circuit coupled to a receiver for receiving an engine start signal therefrom and including means for connecting said potential source to said starter motor in response to said start signal to thereby energize the starter motor, said energizing circuit also being coupled to said generating device for receiving an electric signal therefrom and including means for disconnecting said potential source from said starter motor in response to said electric signal to thereby de-energize the starter motor;

a device for terminating the feeding of fuel to said engine; and

a protection mechanism coupled to said energizing circuit and said fuel feed terminating device including means for deenergizing said energizing circuit and energizing said fuel feed terminating device if said starter motor is energized improperly after the engine has started, to thereby stop the engine and prevent damage thereto.

3,862,430

ELECTRICAL DEMAND LIMITING SYSTEM

James Herbert Fuller Lenhart, Tucson, Ariz., and Purushottam Manilal Patel, Hudson Falls, N.Y., assignors to Rist-Frost Associates, Glens Falls, N.Y.

Filed July 31, 1973, Ser. No. 384,169
Int. Cl. H02j *3/14*
U.S. Cl. 307—35 **29 Claims**

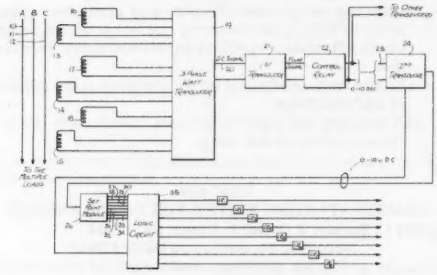
1. An electrical demand limiting system for limiting the load demand of multiple loads during a demand period, the de-

mand period being a period of time over which power demand is measured for billing purposes, comprising:

means, responsive to the power consumption of the loads for producing an output signal proportional to an integrated power demand of the loads during the demand period;

means, responsive to said output signal, for disconecting said loads from the power system when the power demand exceeds predetermined adjustable percentages of the permissible demand limit, said means including means for presetting a plurality of predetermined adjustable percentage set points; and

means coupling the loads to the predetermined adjustable percentage set points for sequentially switching, over a predetermined time period, each of the loads to each of the predetermined adjustable percentage set points.

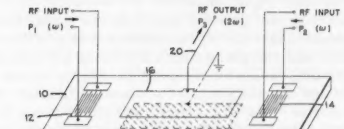


3,862,431

SIGNAL PROCESSING APPARATUS

Calvin F. Quate, Los Altos, and Stephen Ludvik, Palo Alto, both of Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stamford, Calif.

Filed June 4, 1973, Ser. No. 366,623
Int. Cl. H03f *7/04*
U.S. Cl. 307—88.3 **5 Claims**



1. Signal processing apparatus which comprises

a piezoelectric semiconductor capable of propagating acoustic waves,

transducer means for applying two electromagnetic signals to said piezoelectric semiconductor such that acoustic waves are generated therein and are translated with respect to one another during propagation so as to parametrically interact at an overlapping position in said piezoelectric semiconductor, and

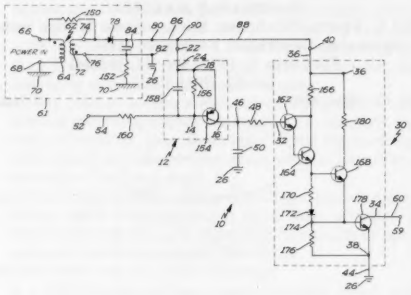
an output electrode forming a rectifying barrier at the surface of said piezoelectric semiconductor at the wave-overlapping position to sense variations in the depletion layer resultant from the electric fields caused by the parametric wave interaction.

3,862,432

TOUCH ACTUATED ELECTRONIC SWITCH

Willis A. Larson, Waybata, Minn., assignor to Magic Dot, Inc., Minneapolis, Minn.

Continuation of Ser. No. 235,671, March 17, 1972,. This application Mar. 12, 1973, Ser. No. 340,183
Int. Cl. H01h *35/00*
U.S. Cl. 307—116 **18 Claims**



1. A D.C. coupled switching circuit actuated by the touch of a human, comprising in combination: means for supplying power to the D.C. coupled switching circuit including a first output for providing a reference isolated from earth ground and including a second output isolated from earth ground for providing a source of voltage; D.C. to power frequency amplification means having input means for receiving a signal to be amplified and having output means for providing a switch output, with the switched output having a first state for approximating an electrical short circuit and a second state for approximating an electrical open circuit, the amplification means being isolated from earth ground; first means for providing a D.C. electrical connection between the power supply means and the amplification means; means for coupling the switching circuit to a source of alternating frequency power for causing the entire switching circuit to oscillate with respect to earth ground at the rate of the alternating frequency; a touch plate isolated from earth ground; and means for providing a D.C. electrical connection between the input means of the amplification means and the touch plate to allow the capacitance of the human to provide an earth reference to the amplification means and cause the output of the amplification means to change between the first and second states.

3,862,433

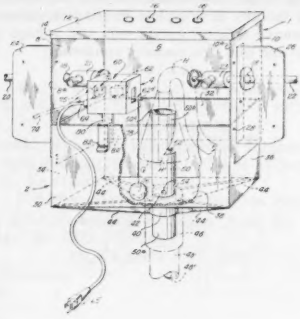
WASHING MACHINE OUTLET DEVICE

Leroy H. Rousselet, 7247 Westbrook Ln., Dallas, Tex. 75214

Filed June 18, 1973, Ser. No. 370,819
Int. Cl. H01h *35/18, 29/00*
U.S. Cl. 307—118 **6 Claims**

1. A washing machine outlet device comprising: an outlet box; spaced sides on said outlet box; a back on said outlet box; means to secure said outlet box to a wall; a trough having a bottom, an upwardly extending frontwall, an upwardly extending backwall, and upwardly extending sidewalls, said bottom having a passage formed therein; means securing sidewalls of said trough to said sides of said outlet box; a tube having a drain opening extending therethrough and having an overflow passage; means securing said tube through said passage in the bottom of the trough such that said overflow passage is positioned in said trough and the lower end of the tube extends below said bottom of the trough; liquid level sensing means in said trough; switch means connected to said sensing means; a

socket connected to one side of said switch means to receive a plug on a washing machine electrical cord; and conductor



means connected to the other side of said switch means, said conductor means being connectable to a source of electricity.

3,862,434

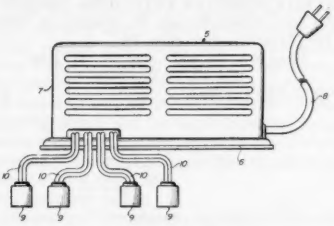
CHRISTMAS TREE LIGHTING CONTROL

George B. Davis, Jr., 7512 Marbury Rd., Bethesda, Md. 20034

Continuation-in-part of Ser. No. 338,832, March 7, 1973, Pat. No. 3,808,450. This application Dec. 6, 1973, Ser. No. 422,350

Int. Cl. H05b *37/00*

U.S. Cl. 307—132 **10 Claims**



1. A control for Christmas tree lighting including in combination a power supply having two or more differing duty-cycle outputs, an electrical outlet electrically connected to the lowest duty-cycle output of said power supply for connecting thereto one or more strings of Christmas tree lights, means movable for electrically connecting in common with the said lowest duty-cycle output the other outputs of said power supply in predetermined sequencial order.

3,862,435

DIGITAL SHIFT REGISTER

Roelof Herman Willem Salters; Lieuwe Boonstra, and Cornelis Willem Lambrechtse, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

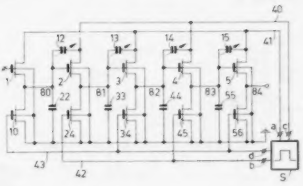
Filed Aug. 7, 1973, Ser. No. 386,335

Claims priority, application Netherlands, Sept. 7, 1972, 7212151

Int. Cl. G11c *19/00;* **H03k** *23/30*

U.S. Cl. 307—221 C **6 Claims**

1. A digital shifter register, of the type comprising a chain of signal-followers, having control inputs and main conduction paths, the control input of each signal-follower being connected both to a storage capacitance and to an electronic switch for establishing a reference level at the associated storage capacitance, wherein the current through the main conduction path of each signal-follower varies as a function of potential in excess of a threshold level between the control input and one end of the main conducting path, the signal-followers being connected in cascade through the control inputs and said one ends of said main conducting paths, two adjacent signal followers being connected to two separate clock lines, the improvement comprising voltage variable capacitances connecting the control input of at least one of



the signal followers to the clock lines which are connected thereto, said variable capacitances having higher capacitance in response to potentials thereacross exceeding the threshold level of the signal follower connected thereto then the capacitance resulting from a potential lower than said threshold level.

3,862,436

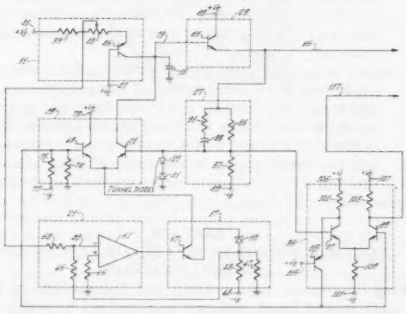
TRIANGLE WAVE GENERATOR HAVING DIRECT TUNNEL DIODE SWITCH CONTROL

Richard E. George, Anaheim, Calif., assignor to Interstate Electronics Corporation, Anaheim, Calif.

Filed Dec. 19, 1973, Ser. No. 426,068

Int. Cl. H03k *4/08*

U.S. Cl. 307—228 **15 Claims**



1. A triangle wave generator capable of high frequency operation, comprising:

a current source;

an integrating device coupled to the output of said current source;

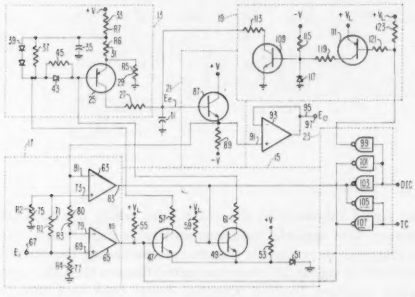
a switch, interposed in series between said current source and said integrating device; and

a tunnel diode, responsive to the voltage output of said integrating device, said tunnel diode being directly connected to said switch to directly drive said switch to close the circuit between said current source and said integrating device, without the interposition of a bistable device between said tunnel diode and said switch which would delay the operation of said switch in response to said tunnel diode.

3,862,437
SAMPLE PEAK AND HOLD WITH DUAL CURRENT SOURCE

Allen J. Rossell, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 4, 1973, Ser. No. 393,886
Int. Cl. H03k *17/00*
U.S. Cl. 307—235 R **29 Claims**



1. A circuit for charging a capacitor to a predetermined percentage of the peak amplitude of an input signal comprising:

voltage sensitive means coupled to said capacitor and receiving said input signal for comparing the charge on said capacitor with said input signal and for identifying a first level of charge and a second level of charge on said capacitor as percentages of peak amplitude of said input signals;

means for supplying current at a high-charging rate and current at a low-charging rate to said capacitor;

first means activable by said voltage sensitive means for controlling said current-supplying means to provide current at said high-charging rate to said capacitor up to said first level of charge when said first activable means is activated;

second means activable by said voltage sensitive means for controlling said current-supplying means to provide current at said low-charging rate to said capacitor up to said second level of charge when said second activable means is activated and said first activable means is inactivated; said current-supplying means being disabled when said first and second activable means are both inactivated.

3,862,438
VOLTAGE MEMORY CIRCUIT FOR ELECTRICAL CONTROL SYSTEMS

Naoji Sakakibara, Takara-machi, and Takeshi Nakane, Okazaki, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Mar. 2, 1973, Ser. No. 337,587
Claims priority, application Japan, Mar. 8, 1972, 47-23857
Int. Cl. H03k *5/20;* **G11c** *27/00*
U.S. Cl. 307—238 **11 Claims**

1. A voltage memory circuit for an electronic control system comprising:

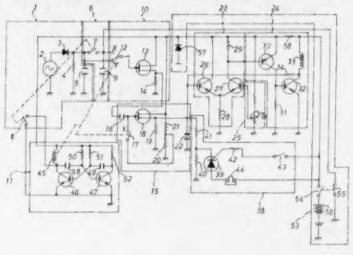
a voltage generating circuit for generating a voltage representing a condition of means to be controlled by said control system;

a first memory condenser connected to said voltage generating circuit through a set switch for memorizing an instantaneous voltage generated from said voltage generating circuit upon closure of said set switch;

a source follower circuit including a field-effect transistor and a source resistor and for selectively reading the memorized voltage in said first memory condenser and the voltage from said voltage generating circuit;

an intermittent signal generating circuit for producing an intermittent output signal;

switching means associating with said intermittent output signal thereby to complete intermittent connections of said source follower circuit with said voltage generating circuit and said first memory condenser;



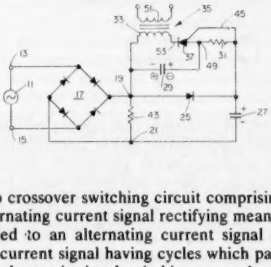
a second memory condenser for intermittently memorizing a difference between a given voltage and the voltage from said first memory condenser through said source follower circuit under the action of said switching means responsive to said intermittent output signal; and

whereby the voltage representing the variation of the condition of said means to be controlled by said control system is delivered across said second memory condenser.

3,862,439
ZERO CROSSOVER SWITCHING CIRCUIT

Ernest F. Coccio, Conshohocken, Pa., assignor to Athena Controls, Inc., West Conshohocken, Pa.

Filed Nov. 19, 1973, Ser. No. 417,066
Int. Cl. H03k *17/72*
U.S. Cl. 307—252 UA **4 Claims**



1. A zero crossover switching circuit comprising in combination: alternating current signal rectifying means adapted to be connected to an alternating current signal source, said alternating current signal having cycles which pass through a zero value; electronic signal switching means having an input element, an output element and a control element; first voltage storage means; first circuitry means connecting said first voltage storage means across said input element and said output element of said electronic signal switching means; second voltage storage means; second circuitry means connecting said second voltage storage means to said first circuitry means and across said first voltage storage means as well as to said control element of said electronic signal switching means; third circuitry means including a unidirectional current conducting device connecting said signal rectifying means to said second circuitry means and across said second storage means whereby during the first quarter of one of said cycles said first and second voltage storage means each develop a first stored voltage and whereby during the second quarter of said cycle said first voltage storage means develops a second stored voltage, which has a particular polarity, in response to a partial discharge of said second voltage storage means thereby biasing said electronic signal switching means for conduction so that immediately following the passing of

said cycle through said zero value said second stored voltage is measured from a positive going signal to provide a voltage bias at said control element to cause said electronic switching means to conduct.

3,862,440

PULSE TRANSFORMING CIRCUIT ARRANGEMENTS USING A CLOCK PULSE RESPONSIVE DELAYED INVERTER MEANS

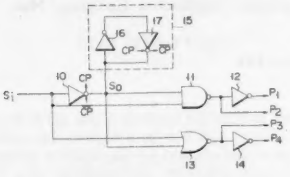
Yasoji Suzuki, Kawasaki, and Tomohisa Shigematsu, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Sept. 11, 1973, Ser. No. 396,181

Claims priority, application Japan, Sept. 14, 1972, 47-91672; Apr. 21, 1973, 48-45432

Int. Cl. H03k *1/18, 5/04*

U.S. Cl. 307—266 **14 Claims**



1. A pulse transforming circuit arrangement comprising:

a delayed inverting means for inverting an input pulse having a relatively long duration to produce an output pulse whose voltage level varies with a predetermined time delay from the level variation of the input pulse;

at least one logic gate means coupled to said delayed inverting means to receive the output pulse of said delayed inverting means and the input pulse for producing an output pulse which is substantially a function of the level variation of the input pulse and having a shorter duration than the input pulse; and

a source of clock pulses;

said delayed inverting means comprising a first clock pulse responsive delayed inverting means operative to invert an input pulse according to a voltage level of at least one clock pulse, which clock pulse varies between a first voltage level during a first section of a period thereof and a second voltage level during a second section of the period following the first section, the voltage level of the input pulse varying when the clock pulse varies from the second voltage level to the first voltage level, and said clock pulse responsive inverting means being operative as an inverter to invert the input pulse when the clock pulse is at the second voltage level.

3,862,441

MOS-FET TIMING CIRCUIT

Hiroshi Nabetani; Atsushi Ueda; Kousaku Uota, and Mitsuaki Ishii, all of Himeki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1973, Ser. No. 417,923

Claims priority, application Japan, Nov. 22, 1972, 47-117371; Dec. 5, 1972, 47-121781

Int. Cl. H03k *17/26*

U.S. Cl. 307—293 **3 Claims**

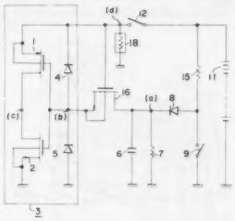
1. A timing circuit, which comprises:

a d.c. power source;

a compensation-type MOS-FET comprising a *p*-channel MOS-FET and an *n*-channel MOS-FET having interconnecting gates and drains as the input and output points thereof, the source of said *p*-channel MOS-FET connected to said d.c. power source;

a resistor and a condenser each connected in parallel with said input point of said compensation-type MOS-FET;

a second *n*-channel MOS-FET whose gate is connected to said d.c. power source, whose drain is connected to said resistor and capacitor, and whose source is connected to



said input point of said compensation-type MOS-FET; and

wherein the ratio of the mutual conductance of said *n*-channel MOS-FET to the mutual conductance of said *p*-channel MOS-FET is higher than 10 or lower than 0.1.

3,862,442

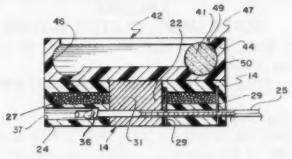
ELECTRIC MOTOR ORBITOR STRUCTURE

Vernon J. David, Durham, Kans.

Continuation of Ser. No. 125,051, March 17, 1971, abandoned. This application May 18, 1972, Ser. No. 254,818

Int. Cl. H01k *21/12*

U.S. Cl. 310—46 **1 Claim**



1. An orbitor structure being a synchronous, alternating current, self starting, electric motor comprising:

a. a stator member having a coil with terminals on said coil connectable to a source of alternating current power,

b. a rotor member positioned in the magnetic field generated by said stator member,

c. said rotor member having integral magnetic poles with at least one pole within the magnetic field generated by said stator members,

d. a guide track structure in operable engagement with said stator member to receive said rotor member and to confine movement of said rotor member within certain areas and about a plurality of paths of motion,

e. said guide track structure being of a spherical shape and completely enclosed having said rotor member mounted therewithin, said rotor member is movable in numerous paths in a generally circular motion confined only by the spherical shape and inner surface of said guide track structure,

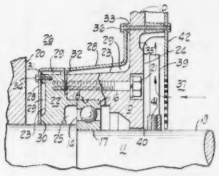
f. said rotor member of a spherical shape having half spherical sections of different magnetic poles movable in unlimited rotational paths in said guide track structure, and

g. said guide track structures of spherical shape being rotatable on said stator member to achieve variable movement of said rotor member.

3,862,443
COOLING MEANS FOR BEARING STRUCTURE IN DYNAMOELECTRIC MACHINE

John D. Edick, Wickliffe, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio

Filed Nov. 15, 1973, Ser. No. 415,960
Int. Cl. H02k 9/18
U.S. Cl. 310—57 9 Claims

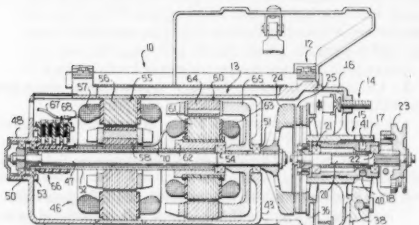


1. A dynamoelectric machine, comprising in combination:
a frame;
a rotor;
bearing means;
means mounting said bearing means to said frame for journalling said rotor;
said bearing means being in thermal contact with a portion of an inner surface of the machine and in thermal contact with a portion of an outer surface of the machine;
thermal insulation means established adjacent said portion of the inner surface of the machine to thermally insulate said bearing means from the gas internal the machine;
and means for removing heat from said portion of the outer surface of the machine to provide a reduced operating temperature of said bearing means.

3,862,444
SUPER SPEED CLUTCH MOTOR

Arthur N. Hale, Park Ridge, Ill., assignor to Union Special Company, Chicago, Ill.

Filed Feb. 12, 1973, Ser. No. 331,699
Int. Cl. H02k 7/10, 7/112
U.S. Cl. 310—74 5 Claims

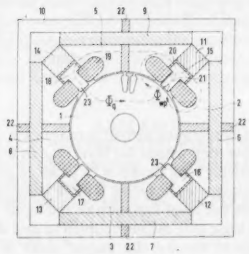


1. A high speed clutch-brake drive for intermittently driving a serving machine head, said drive comprising a fixed housing having means for mounting the same in fixed relation to a sewing machine head, at least two constantly rotating induction motors mounted within said housing, said motors having rotating components including a power shaft rotatably journalled relative to said housing, coupling means coupling rotating components of said motors for continuously driving said power shaft at a speed corresponding to the total of the speeds of said two motors and in excess of synchronous speed, a flywheel secured to said power shaft for continuous rotation therewith, an output shaft rotatably supported by said housing in axial alignment with said power shaft, a drive pulley carried by said output shaft for driving a sewing machine head, and a clutch-brake device carried by said housing for selectively coupling said output shaft to said flywheel for rotation therewith and for preventing rotation of said output shaft, said clutch-brake device including a fixed friction face spaced from and opposing said flywheel, a clutch disc coupled to said output shaft and having two friction engaging faces, said clutch disc being positioned between said flywheel and said fixed friction face and means mounting said clutch disc for selective engagement with said flywheel for rotation therewith and said fixed friction face for braking said clutch disc.

3,862,445
STATOR STRUCTURE FOR PERMANENT MAGNET EXCITED MACHINES

Wolfgang Volkrodt, Muhlbach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 4, 1974, Ser. No. 447,997
Claims priority, application Germany, Mar. 5, 1973, 2310948
Int. Cl. H02k 21/26
U.S. Cl. 310—154 3 Claims



1. In a permanent magnet excited machine, a stator including a plurality of laminated main pole segments disposed about the armature of the machine, said pole segments forming a plurality of main poles about the armature, a solid yoke surrounding the pole segments and the armature, and a plurality of slabs of magnetic material disposed between the yoke and the pole segments, the improvement comprising:
a plurality of blocks of magnetic material, disposed about said armature between adjacent ones of said main poles formed by said segments; and
a plurality of laminated reversing poles, including windings disposed thereon disposed between said adjacent poles adjacent to and radially further inward than said blocks of magnetic material, said reversing poles and said blocks of magnetic material being dimensioned so as to provide lateral air gaps adjacent each of said reversing poles between said windings on each of said reversing poles and said blocks of magnetic material disposed adjacent thereto.

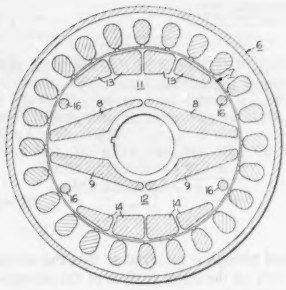
3,862,446
TWO POLE SYNCHRONOUS RELUCTANCE MOTOR

Clarence B. Hilgeman, and E. Roe Poellot, Jr., both of Cincinnati, Ohio, assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 28, 1973, Ser. No. 429,218
Int. Cl. H02k 19/06
U.S. Cl. 310—163 3 Claims

1. A rotor for a two pole synchronous reluctance motor comprising:
a stack of magnetic laminations forming a core having a pair of effective oppositely disposed salient poles, a plurality of circumferentially spaced interconnected conductors in

each salient pole portion adjacent the periphery thereof forming main pole windings, the main conductors of each pole encompassing 90 mechanical degrees of said rotor core, flux barriers formed in and extending across said core between said main pole windings with the ends thereof circumferentially spaced from said main pole winding, and at least one additional secondary conductor



located in the space between the ends of each main pole winding and each end of said flux barrier adjacent the periphery of said core, the space between the ends of said main pole windings and the circumferentially nearest secondary conductor being greater than the space between any two adjacent main conductors, said conductors being connected together to form a squirrel cage winding.

3,862,447

GAS DISCHARGE PANEL

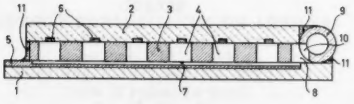
Gerhard Heinrich Friedrich De Vries, and Petrus Franciscus Antonius Haans, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,255

Claims priority, application Netherlands, Jan. 15, 1973, 7300553

Int. Cl. H01j *61/30*

U.S. Cl. 313—220 **4 Claims**



1. A gas discharge panel comprising a base plate, a front plate and an exhaust tube which is in open communication with at least one space which is present between the base plate and the front plate, said exhaust tube extending along an edge of the gas discharge panel.

3,862,448

COLOUR PICTURE TUBE INCLUDING SHADOW MASK HAVING SELF-COMPENSATION FUNCTION FOR THERMAL STRESS

Tomio Ishizuka; Hiromi Kanai; Takao Kawamura, and Kenichi Fukuzawa, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

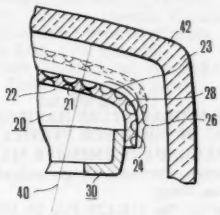
Filed Aug. 31, 1972, Ser. No. 285,322

Claims priority, application Japan, Sept. 3, 1971, 46-79365; Nov. 1, 1971, 46-100852

Int. Cl. H01j *29/06*

U.S. Cl. 313—402 **2 Claims**

1. In a color picture tube comprising a colour selection electrode assembly including an integrally formed operating portion adapted to transmit an electron beam, a peripheral portion surrounding said operating portion and a side portion; and a supporting frame welded to said side portion, the improvement which comprises a cushion zone formed by weakening the mechanical strength continuously over the area of thermal stress transmission in said peripheral portion and said side portion through provision of a uniformly distributed plurality of small blind openings over said area to obviate maldistribution of thermal stress in the mask.



2. In a color picture tube comprising a colour selection electrode assembly including an integrally formed operating portion adapted to transmit an electron beam, a peripheral portion surrounding said operating portion and a side portion; and a supporting frame welded to said side portion, the improvement which comprises a cushion zone formed by weakening the mechanical strength continuously over the area of thermal stress transmission in said peripheral portion and said side portion through provision of a reduced thickness over said area to obviate maldistribution of thermal stress in the mask.

3,862,449

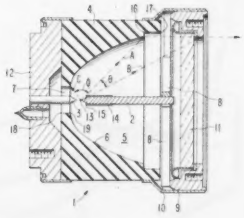
ION SLEEVE FOR ARC LAMP ELECTRODE

William R. Stuart, San Carlos, and Donald H. Preist, Menlo Park, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed July 25, 1973, Ser. No. 382,407

Int. Cl. H05b *37/00*

U.S. Cl. 313—217 **4 Claims**



1. An arc lamp comprising an envelope for confining an ionizable gas, a reflector in said envelope, first and second

electrodes mounted within said envelope on a common axis and being separated from each other along said axis in non-overlapping arrangement to form an arc gap between the facing ends of said electrodes, said first electrode having a generally conical surface at its end which faces the opposite electrode, said common axis being substantially parallel to the direction taken by light reflected from said reflector, said first electrode also having a projecting portion which extends from the base of said conical surface toward said gap, whereby an electrical potential between said electrodes will establish an electrical field which is greater at the distal end of said projecting portion than at the apex of said first electrode.

3,862,450

BISTABLE STORAGE TUBE HAVING STORAGE DIELECTRIC OF PHOSPHOR PARTICLES COATED WITH SECONDARY EMISSIVE MATERIAL

Ralph A. Mossman, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

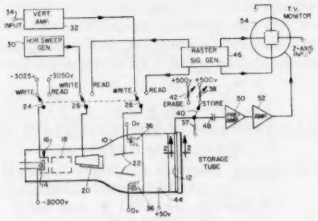
Continuation of Ser. No. 618,129, Feb. 23, 1967, abandoned. This application May 7, 1970, Ser. No. 37,378

Int. Cl. H01j *29/39, 29/10*

U.S. Cl. 313—396 **12 Claims**

1. Charge image storage tube apparatus including: a storage target having a storage dielectric layer provided on a support member and capable of bistable storage of a charge image formed on said storage dielectric, means for forming a charge image on said storage dielectric, and flood gun means for bombarding the storage dielectric substantially uniformly with low velocity electrons to cause bistable storage of said charge image by secondary electron emission therefrom,

said storage dielectric layer being composed of a plurality of particles of phosphor material which are at least partially coated with secondary electron emissive material having a higher secondary electron emission efficiency

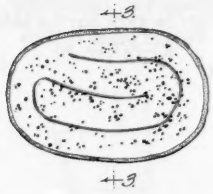


than said phosphor material so that the secondary material is only on the outer surface of the phosphor particles, the coating of secondary emissive material on the phosphor particles being permeable to said low velocity electrons, and substantially all of said secondary emissive material in said layer being bonded to the phosphor particles and substantially uniformly distributed throughout said layer to increase the writing speed of the storage target without greatly decreasing the brightness of the light image emitted by the phosphor material corresponding to the stored charge image.

DESIGNS

GRANTED JANUARY 21, 1975

234,099
TOASTER PASTRY-SNACK FOOD PRODUCT
Harold G. Gobble, Johnstown Township, Barry County, Raymond Mooi, Wyoming, and Gordon L. Bordewyk, East Grand Rapids, Mich., assignors to Kellogg Company, Battle Creek, Mich.
Filed Feb. 16, 1973, Ser. No. 332,936
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—13



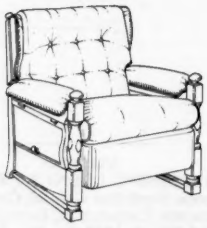
234,100
MULTIPLE-FORM FURNITURE ARTICLE
Judith Reiser, 99—11 63rd Ave., Rego Park, N.Y. 11374
Filed Aug. 2, 1972, Ser. No. 277,171
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—1

234,101
STOOL
Philip Robert Salmon, Mississauga, Ontario, Canada (485 Broadview Ave., Toronto, Ontario, Canada), and Hugh Campbell, Willowdale, Ontario, Canada (R.R. 1, Edwards, Ontario K0A 1V0, Canada)
Filed Apr. 23, 1973, Ser. No. 353,600
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26

234,102
RECLINING LOUNGE CHAIR
Tim M. Uyeda, South San Gabriel, Calif., assignor to Samsonite Corporation, Denver, Colo.
Filed Mar. 2, 1973, Ser. No. 337,429
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—38

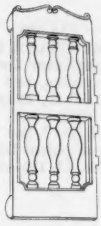
234,103
COMBINED CYCLE SEAT AND FENDER
Michael W. Hanagan, Somers, Conn., assignor to Corbin Gentry, Inc., Somersville, Conn.
Filed Sept. 13, 1973, Ser. No. 397,133
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D6—48.1

234,104
CHAIR
Morris F. Fisher, 9820 Deerfield Circle, Carmel, Ind. 46032
Filed June 1, 1973, Ser. No. 366,232
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—42



234,105
CHAIR
Kenichi Katoda, Otsuki, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1973, Ser. No. 336,533
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—76

234,106
CHAIR BACK OR SIMILAR ARTICLE
Raymond Grosfillex, Arbent, France, assignor to Grosfillex S.A.R.L.
Filed Dec. 2, 1970, Ser. No. 26,255
Claims priority, application France June 6, 1970
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197



234,107
GOBLET OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 30, 1973, Ser. No. 383,835
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—12

234,108
GOBLET OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 30, 1973, Ser. No. 384,135
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—13

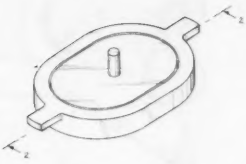
234,109
GOBLET OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 30, 1973, Ser. No. 384,131
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—12

234,110
TUMBLER OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 30, 1973, Ser. No. 384,133
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—15

234,111
TUMBLER OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 30, 1973, Ser. No. 384,134
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—15

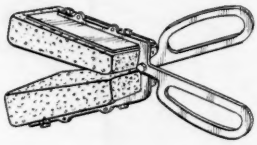
234,112
TUMBLER OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 30, 1973, Ser. No. 384,136
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—15

234,113
COMBINED FOOD PATTY MOLD AND PRESS MEMBER
Julian G. Wright, Rte. 1, Box 757, Splendora, Tex. 77372
Filed Oct. 10, 1972, Ser. No. 295,809
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—43



234,114
COFFEEMAKER OR THE LIKE
Karl H. Bergmann and Richard G. Gelak, Cherry Hill, N.J., assignors to Melitta, Inc., Cherry Hill, N.J.
Filed Sept. 19, 1973, Ser. No. 398,756
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85

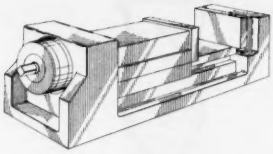
234,115
CLEANING IMPLEMENT
Timothy T. Watson, 1437 Cerritos Ave., Long Beach, Calif. 90813
Filed May 15, 1972, Ser. No. 253,682
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—179



234,116
PRECISION WELDING KIT
Lloyd A. Douglas, 5020 Whistler Drive, Fort Worth, Tex. 76133
Filed Oct. 3, 1972, Ser. No. 294,634
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30

234,117
SCISSORS
I. M. Laurenti, 432 Park Ave. S., New York, N.Y. 10016
Filed June 28, 1973, Ser. No. 374,363
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57

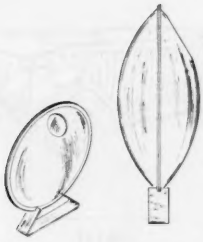
234,118
WORK HOLDING DEVICE
Thomas J. Molitors, Akron, Ohio, assignor to Karg Machine Products, Inc., Tallmadge, Ohio
Filed Dec. 13, 1972, Ser. No. 314,755
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—74



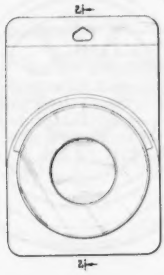
234,119
SMOKE EJECTOR HANGER
Cyril Pontillo, 2301 35th St., Kenosha, Wis. 53140
Filed Apr. 9, 1973, Ser. No. 348,987
Term of patent 7 years
Int. Cl. D8—*08*
U.S. Cl. D8—246

234,120
BOTTLE
Gilbert S. Cassin, 23 Rue Alberic Magnard 75, Paris 16eme, France
Filed Aug. 17, 1972, Ser. No. 281,487
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—67

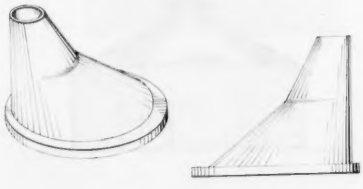
234,121
COMBINED PACKAGING CONTAINER AND STAND THEREFOR
Randall M. Budd, 541 W. Commerce, Dallas, Tex. 75208
Filed Mar. 28, 1973, Ser. No. 345,657
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—182



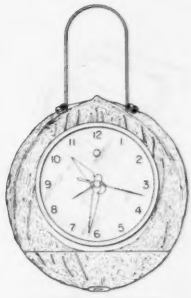
234,122
TAPE PACKAGE OR SIMILAR ARTICLE
Saul M. Horblitt, Malverne, Long Island, N.Y., assignor to Berwick Industries Incorporated, Paramus, N.J.
Filed May 18, 1972, Ser. No. 254,838
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—191



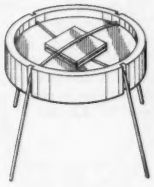
234,123
POURING ATTACHMENT FOR CANS
Frank Ragagli, 210 Redrock St., Anaheim, Calif. 92806
Filed May 18, 1973, Ser. No. 361,726
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—290



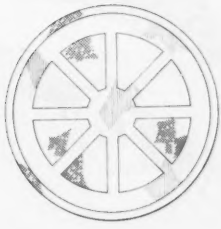
234,124
CLOCK
Joseph E. F. Goddard, 144 Warren Ave., East Providence, R.I. 02914
Filed Nov. 24, 1972, Ser. No. 309,103
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—9



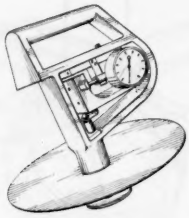
234,125
PIEZOELECTRIC TRANSDUCER ASSEMBLY FOR ULTRASONIC SURVEILLANCE SYSTEM OR THE LIKE
Ralph W. Goble, Eldora, Colo., assignor to Sontrix, Inc., Boulder, Colo.
Filed May 5, 1972, Ser. No. 250,855
Term of patent 14 years
Int. Cl. D29—*99*; D14—*03*
U.S. Cl. D10—104



234,126
BICYCLE REFLECTOR
T. Jerry Bender, 12609 26th Ave. N., Minneapolis, Minn. 55411
Filed June 7, 1973, Ser. No. 367,835
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—111

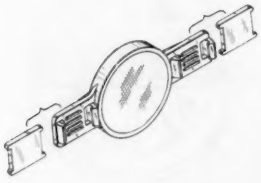


234,127
PORTABLE COMPRESSION TESTER FOR PLASTIC FOAM
Thomas R. Bishop, Hickory, N.C., assignor to Hickory Springs Manufacturing Company, Hickory, N.C.
Filed Jan. 12, 1973, Ser. No. 322,912
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—83

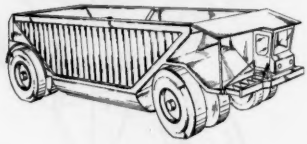


234,128
SAFETY MARKER FOR BICYCLES
John M. Kiniry, 107 Maple Drive 32937, and Anthony Finazzo, 5A Venetian Way 32937, both of Brevard, Fla.
Filed Sept. 28, 1972, Ser. No. 293,666
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—111

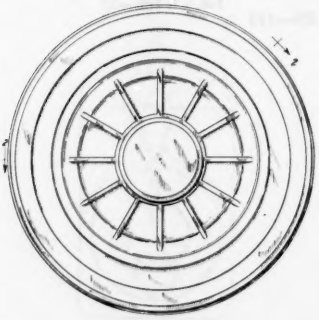
234,129
BICYCLE REFLECTOR
Nicholas A. Amoroso, Hillsdale, N.J., assignor to Bright Star Industries, Inc., Clifton, N.J.
Filed Aug. 27, 1973, Ser. No. 392,048
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—111



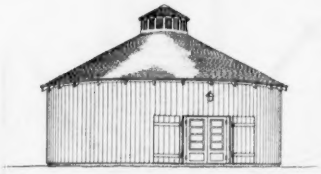
234,130
TRUCK
Edward S. Kress, 4009 N. Brookdale Place, and Ralph H. Kress, 4444 Knoxville Ave., both of Peoria, Ill. 61614
Filed May 12, 1972, Ser. No. 252,712
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—15



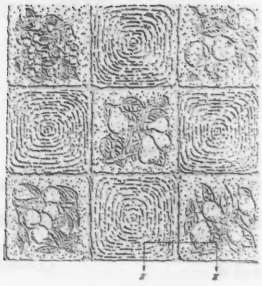
234,131
ROTARY LAWN MOWER WHEEL
Neill C. Woelffer, Racine, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.
Filed May 31, 1973, Ser. No. 365,437
Term of patent 14 years
Int. Cl. D12—*15, 16*
U.S. Cl. D12—135



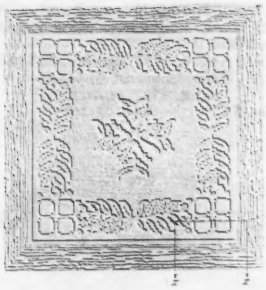
234,132
CIRCULAR BUILDING
Kenneth K. Varian, 6342 Orchardview Drive SE., East Canton, Ohio 44730
Filed June 29, 1973, Ser. No. 375,063
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 E



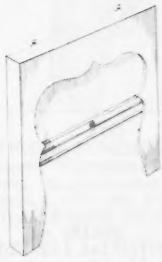
234,133
CEILING TILE
James E. Hazeley, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Mar. 26, 1973, Ser. No. 344,946
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B



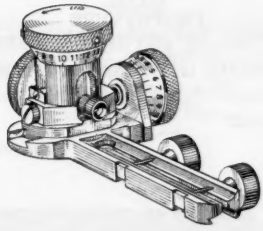
234,134
CEILING TILE
Joseph E. Sienkiewicz, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Mar. 26, 1973, Ser. No. 344,942
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B



234,135
COMBINATION WINDOW COVER AND SHADE
Arthur Conrad, 408 Magnolia, White Oak, Tex. 75693
Filed Mar. 1, 1973, Ser. No. 337,272
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D21—6 R



234,136
GUNSIGHT
Olle Edstrom, 18 Langgatan, 82700 Ljusdal, Sweden
Filed Oct. 5, 1973, Ser. No. 403,903
Claims priority, application Sweden Apr. 10, 1973
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D22—8

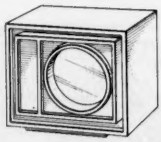


234,137
GUN HOLSTER
Earl J. Clark, 8751 Owensmouth St., Canoga Park, Calif. 91304
Filed Sept. 21, 1973, Ser. No. 399,316
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13

234,138
FLEXIBLE ARTIFICIAL LEECH FISH LURE
James W. Fladebo, Isle, Minn., assignor to Mille Lacs Manufacturing Company, Isle, Minn.
Filed Nov. 21, 1973, Ser. No. 417,977
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

234,139
FISHING LURE
Charles W. McLaughlin, 516 E. Jefferson, Clinton, Mo. 64735
Filed May 15, 1974, Ser. No. 470,225
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

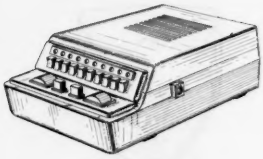
234,140
CABINET FOR A SECURITY SYSTEM
Gary H. Gregg, Los Angeles, Calif., assignor to Graymark Enterprises Inc., Los Angeles, Calif.
Filed Aug. 9, 1972, Ser. No. 279,007
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D26—1 Q



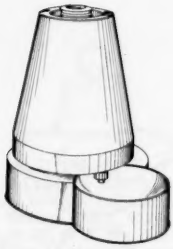
234,141
ELECTRICAL CONNECTOR
Eugene W. McGrane, 887 Colonial Road, Elizabeth, N.J. 07204
Filed July 24, 1972, Ser. No. 274,277
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A

234,142
CONTROL CONSOLE
Richard F. Snow, Southfield, and David A. Thomasson, Northville, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 6, 1973, Ser. No. 383,944
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

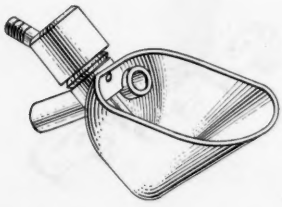
234,143
SCANNING RECEIVER OR SIMILAR ARTICLE
Eugene Leon Morgan, 4631 S. 46th St., Lincoln, Nebr. 68516
Filed July 13, 1973, Ser. No. 378,986
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 K



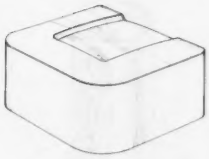
234,144
PET WATERER
Arthur L. Fassauer, Canyon, Tex., assignor to Fassauer Industries, Inc.
Filed May 7, 1973, Ser. No. 357,845
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



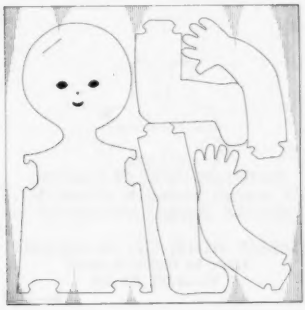
234,145
POULTRY WATERING CUP
William S. Peppler, New York, N.Y., and Everett M. Keen, Anthony J. Siciliano, and Graham Baker, Vineland, N.J., assignors to Diamond International Corporation, New York, N.Y.
Filed Apr. 3, 1973, Ser. No. 347,370
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—16



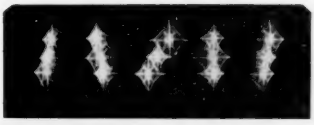
234,146
PHARMACEUTICAL TABLET
Larry L. Fites, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Mar. 2, 1973, Ser. No. 337,678
Term of patent 14 years
Int. Cl. D28—*01*
U.S. Cl. D32—3



234,147
DOLL FIGURE PUNCHOUT BOARD
Ann S. Trageser, Valparaiso, Ind., assignor to Voltex, Inc., Burlington, Mass.
Filed Sept. 4, 1973, Ser. No. 393,981
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

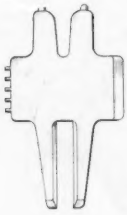


234,148
BOWLING LANE MASKING SHIELD
Walter B. Herbst, 86 Salem Lane, Evanston, Ill. 60203 and Ralph M. Lazar, 4442 Emerson, Skokie, Ill. 60076
Filed Sept. 10, 1971, Ser. No. 179,612
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 DD

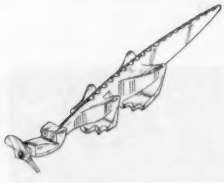


234,149
CHANCE TYPE AMUSEMENT DEVICE
Philip J. Rowman, Hillsboro Park, Derry Road, Hudson, N.H. 03051
Filed June 4, 1973, Ser. No. 366,413
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 MM

234,150
GOLF TOOL
Raymond L. Yaudes, P.O. Box 912, Stephenville, Tex. 76401
Filed Aug. 6, 1973, Ser. No. 386,057
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



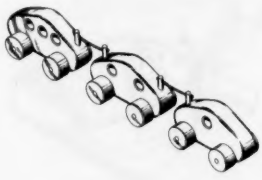
234,151
SPINNER TOY
Lloyd E. Cross, Jr., Troy, Kans. 66087
Filed Aug. 3, 1972, Ser. No. 277,796
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AA



234,152
MIRRORED CRADLE GYM TOY
Eugene J. Echterling, Woodland Hills, Calif., assignor to Questor Corporation, Toledo, Ohio
Filed Jan. 24, 1973, Ser. No. 326,305
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 J

234,153
CRADLE GYM TOY
Eugene J. Echterling, Woodland Hills, Calif., assignor to Questor Corporation, Toledo, Ohio
Filed Jan. 24, 1973, Ser. No. 326,303
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 J

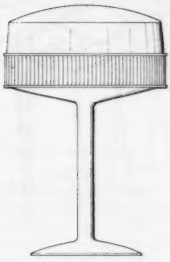
234,154
TOY TRAIN
Lloyd A. Nielsen, 4441 South Ave. W., Missoula, Mont. 59801
Filed Feb. 28, 1973, Ser. No. 336,690
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



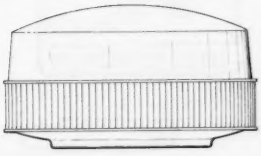
234,155
LAMP
Larry M. Gellert, Cincinnati, Ohio, assignor to The First National Bank of Cincinnati
Continuation-in-part of abandoned application Ser. No. 156,574 June 24, 1971. This application Dec. 29, 1972, Ser. No. 319,514
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 R

234,156
CONGA DRUM
Sam U. Lane, 1675 N. Teilman Ave., Apt. B, Fresno, Calif. 93705
Filed Apr. 23, 1973, Ser. No. 353,410
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D56—1 E

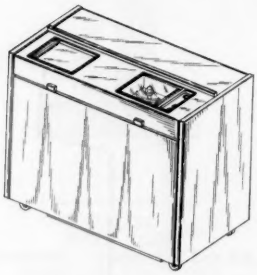
234,157
COMBINED RECORD PLAYER HOUSING AND STAND
Harvey K. McQuarrie, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada
Filed Feb. 21, 1973, Ser. No. 334,463
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



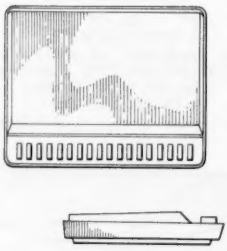
234,158
RECORD PLAYER HOUSING
Harvey K. McQuarrie, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada
Filed Feb. 23, 1973, Ser. No. 335,032
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



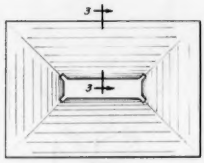
234,159
PHOTOGRAPHIC FILM PROCESSOR
Frederick G. Knowles, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 12, 1973, Ser. No. 323,168
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1 Q



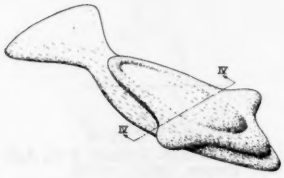
234,160
TELEPHONE LIST FINDER
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Compay Ltd., Tokyo, Japan
Filed June 4, 1973, Ser. No. 366,848
Claims priority, application Japan, Mar. 8, 1973
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 C



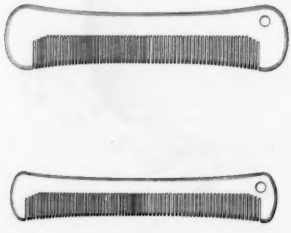
234,161
DECORATIVE VEGETATION SUPPRESSING SURROUND FOR GRAVE MARKING STRUCTURES
Joseph J. Matvey, 1100 Penn Center Blvd.—615 Pittsburgh, Pa. 15235
Filed Feb. 11, 1972, Ser. No. 225,705
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D79—2



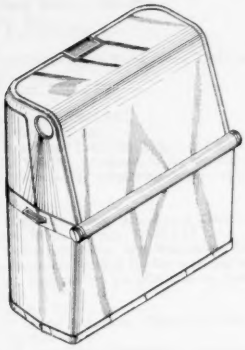
234,162
SANITARY NAPKIN
Find Andersen, Copenhagen, Denmark, assignor to Karl Krøyer Kristian Kobs
Filed Nov. 17, 1972, Ser. No. 307,520
Claims priority, application Denmark May 18, 1972
Term of patent 7 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 A



234,163
COMB
Hans Metall, Ternitz, Dominic Habsburg, Berndorf, James Skone, Vienna, and Anton Prutsch, Traiskirchen, Austria, assignors to Deutsche Semperit, G.m.b.H., Munich, Germany
Filed Feb. 26, 1973, Ser. No. 338,052
Claims priority, application Germany, Sept. 4, 1972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8

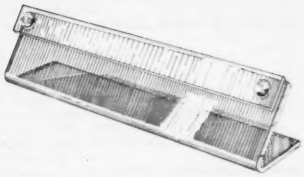


234,164
CARRYING CASE OR THE LIKE
Samuel Franklin Swayze, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 18, 1973, Ser. No. 324,623
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—5 E

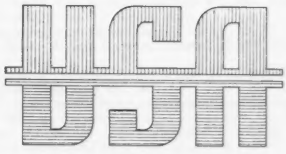


234,165
WALKER
Morton I. Thomas, Monroe, N.Y., assignor to Temco Products, Inc., Passaic, N.J.
Filed Apr. 9, 1973, Ser. No. 349,055
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—5

234,166
SIGN
Leslie M. Silverman, 2 Kansas St., San Francisco, Calif. 94103
Filed Oct. 12, 1972, Ser. No. 297,048
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—3



234,167
INVERTIBLE SIGN
Elmer E. S. Lengyel, 4655 Wild Indigo, #231 Houston, Tex. 77027
Filed Apr. 3, 1972, Ser. No. 240,910
Term of patent 14 years
Int. Cl. D20—*03;* D11—*03;* D18—*03*
U.S. Cl. D96—12 E



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF JANUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See*—
Dorfel, Gerhard Walter, 3,861,996.

AAI Corporation: *See*—
Barr, Irwin R., 3,861,314.

AB Carbox: *See*—
Jonsson, Finn Lennart; and Trolle, Sten, 3,861,618.

AB Carl Munters: *See*—
Polovina, Walter, 3,862,280.

AB Fractionator: *See*—
Skardal, Karl Arvid, 3,861,532.

AB Svenska Flaktfabriken: *See*—
Sjoqvist, Lennart; and Lidbamn, Stig, 3,861,824.

Abe, Shigeo; and Yokote, Yasuharu, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for producing yeast cells. 3,862,006, Cl. 195-49.000.

Abegg, Jean-Louis: *See*—
Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Guiliana; and de Beaulieu, Henri Philippe, 3,862,221.

Abel, Konrad; Seibecker, Hans; and Wichmann, Guenter, to Eltro GmbH. Opto-electronic method for the scanning of terrain profiles and a switching arrangement for effecting the method. 3,862,424, Cl. 250-349.000.

Ackerman, Phillip W.: *See*—
Cohen, Peter J.; and Ackerman, Phillip W., 3,862,373.

Acorn Engineering Co.: *See*—
Morris, Earl L.; and Sally, Theodore J., 3,861,568.

Adachi, Yoshiaki: *See*—
Onozuka, Mitsuo; Hayashi, Yasuo; and Adachi, Yoshiaki, 3,861,949.

Adams, Frederick John, to Cam Gears Limited. Bearing assembly and bearing bushing therefor. 3,861,764, Cl. 308-26.000.

Adams, Herbert John Frederich; Kronberg, George Herbert; and Takman, Bertil Herbert, to Astra Fharmaceutical Products, Inc. Acyl xylidide local anaesthetics. 3,862,321, Cl. 424-274.000.

Adams, Hugh L. Torque controlling sheave. 3,861,228, Cl. 74-230.17M.

Adams, John H., to Pittsburgh-Des Moines Steel Company. Storage tank for liquids and method of making same. 3,861,552, Cl. 220-5.00A.

Adams, Otis J.; Dodson, Osborne C.; and Osborn, Merritt A., to Esco Manufacturing Company. Composite gear structure. 3,861,242, Cl. 74-750.00R.

Adams, Phillip; and Petrocci, Alfonso N., to Millmaster Onyx Corporation. Microbiocidal naphthenyl imidazolines. 3,862,318, Cl. 424-200.000.

Adams Rite Manufacturing Company: *See*—
Froerup, Carl; and Mitchell, Russell L., 3,861,727.

Addiego, Joseph: *See*—
Tingley, William E.; and Addiego, Joseph, 3,861,583.

Adler, Stanford L., to Technicon Instruments Corporation. Method and apparatus for determining the viscosity of a liquid sample. 3,861,197, Cl. 73-59.000.

Adlerwerke vorm. Heinrich Kleyer: *See*—
Wenderoth, Karl, 3,861,235.

Adolf Zimmerman Maschinenbau: *See*—
Lesk, Adolf; Zimmerman, Adolf; and Link, Otmar, 3,861,753.

Ady, Larry D., to Superior Products. Bag holder. 3,861,630, Cl. 248-100.000.

AERPAT A.G.: *See*—
Summerlin, Frederick Arthur, 3,861,014.

Afrance, Frank C.; Rosa, Albert G.; and Haas, Ronald J., to McDonnell Douglas Corporation. Battery separator construction. 3,861,963, Cl. 136-146.000.

Ag. Automation: *See*—
Huxley, Thomas C., III; Garber, Duane L.; and Huxley, Thomas C., IV, 3,861,535.

Aggogle Inc.: *See*—
Shorin, Joseph E., 3,861,631.

Agneta, Nicholas J., to Ideal Toy Corporation. Interchangeable mold assembly. 3,861,640, Cl. 249-102.000.

Ahnehmiller, James: *See*—
Danielson, Arthur C.; and Ahnehmiller, James, 3,861,950.

Ahrens, Dietrich; Roder, Kurt; and Pieroh, Ernst Albrecht, to Scherings AG; and Scherings AG. 1,3,-Di-(isopropylideneaminooxycarbonyl) benzindazole carbamates. 3,862,126, Cl. 260-309.200.

Aida, Hiroyuki; Tsuneishi, Norihiro; Takizawa, Hideo; and Miyabayashi, Yoshiyuki, to Nissan Motor Company Limited. Method of joining the edge portions of two sheets. 3,861,339, Cl. 113-116.00C.

Air Balance, Inc.: *See*—
Tarnoff, Sherwin S., 3,861,443.

Air Preheater Company, Inc., The: *See*—
Krumm, Eugene D., 3,861,333.
Kurschner, Hermann E.; and Finnemore, Harlan E., 3,861.013.
Ostrander, George K.; and Wixson, Donald F., 3,861,458.
Stockman, Richard F., 3,861,334.

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Bechara, Ibrahim S.; and Holland, Dewey G., 3,862,150.
Dixon, Dale D.; Manly, Donald G.; and Recktenwald, Gerald W., 3,862,284.
Eisenlohr, Karl Heinz; Grosshans, Winfried A.; and Nakajima, Toshiyuki, 3,862,254.
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Sakakibara, Naoji; and Nakane, Takeshi, 3,862,438.

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AKG Akustische u. Kino-Gerate Gesellschaft m.b.H.: *See*—
Pless, Ernst, 3,862,379.

Aktiebolaget Bofors: *See*—
Gustafsson, Axel Gerhard Varne, 3,861,696.

Aktiebolaget Leo: *See*—
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Woods, Gilbert Frederick; Cairns, James; and McGarry, George, 3,862,194.
Zandstra, Bertrus H.; and Bosman, Jan, 3,862,084.

Alar Engineering Corporation: *See*—
Doncer, Alex J.; and White, Harold R., 3,861,890.

Albanese, James: *See*—
Lisbin, Arthur; Tanney, George; and Albanese, James, 3,861,563.

Albright, Charles Jere; Fitch, Clifford E., Sr.; and Fitch, Clifford E., Jr., to Chemetron Corporation, by said Albright. Apparatus for cooking food in hot non-aqueous liquids under pressure. 3,861,286, Cl. 99-327.000.

Albright, Gerard P.: *See*—
Grier, David G.; Albright, Gerard P.; and Rees, David G., 3,861,453.

Alcan Aluminum Corporation: *See*—
Boltz, Duane A.; and Gardner, James J., 3,861,122.

Alford, J. A.: *See*—
Story, Paul R.; Whited, E. A.; Alford, J. A.; Ray, Wesley C.; and Burgess, John R., 3,862,142.

Algeri, Harvey R., to Nordson Corporation. Material dispenser control circuit with false trigger prevention. 3,862,414, Cl. 250-206.000.

Allen, Brian Robert, to Lucas Electrical Company Limited, The. Method of manufacturing a rotor assembly for a dynamo electric machine. 3,861,027, Cl. 29-597.000.

Allen, Joseph C.: *See*—
Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., 3,862,044.

Allied Chemical Corporation: *See*—
Hartman, Paul F., 3,862,056.
Taylor, John R.; Jones, Harold F.; and Ousterling, David L., 3,861,550.
Vander Mey, John E., 3,861,733.

Allis-Chalmers Corporation: *See*—
Hilgeman, Clarence B.; and Poellot, E. Roe, Jr., 3,862,446.

Allmanna Svenska Elektriska Aktiebolaget: *See*—
Dahle, Orvar; Von Knorring, Folke; and Gylen, Nils, deceased, 3,861,203.

Allwang, Heribert; Haubner, Georg; and Hofer, Walter, to Robert Bosch G.m.b.H. Magneto ignition system for internal combustion engines. 3,861,373, Cl. 123-148.00E.

Aluminum Company of America: *See*—
Couchman, Richard, 3,862,286.
Gayner, Herbert; and Smith, David A., 3,861,976.

Aluminum Pechiney: *See*—
Maurel, Pierre; and Duhart, Pierre, 3,862,293.

Amann, August; Koenig, Horst; and Thieme, Peter. New 2-imino-5-methylenethiazolidines. 3,862,165, Cl. 260-306.70T.

Amano, Hiroyuki: *See*—
Hara, Hiroshi; Yokota, Yukio; Amano, Hiroyuki; and Nishimura, Tokio, 3,861,923.

Amerace Esna Corporation: *See*—
Goldberg, Bruce S., 3,862,030.

American Cyanamid Company: *See*—
Gross, Frank J., 3,862,326.
Susi, Peter Vincent, 3,862,053.

American Seating Company: *See—*
Barecki, Chester J.; and Waleson, Donald, 3,861,556.
American Standard Inc.: *See—*
Young, Sherwood L., 3,860,979.
American Totalisator Company, Inc.: *See—*
Dorn, Frank E., Jr., 3,861,303.
Amies, Gerald E., to United States of America, Air Force. Low pressure test for reservoir level system. 3,861,209, Cl. 73-168.000.
Ammann, Paul R.; and Loose, Thomas A., to Kennecott Copper, Corp. Pyrometallurgical system with fluid cooled stirrer. 3,861,660, Cl. 266-34.00A.
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Anderson, Arnold L., to Michigan Chemical Corporation. Polyester plastic compositions containing bis-phenoxy flame retardants. 3,862,085, Cl. 260-45.90R.
Anderson, Emmett R.; and Schatz, Douglas S., to Applied Materials Technology, Inc. Cool wall radiantly heated reactor. 3,862,397, Cl. 219-405.000.
Anderson, George J.; and Ingram, Woodrow H., II, to Monsanto Company. Phenolic resin emulsions comprising a resole resin and a soluble protein. 3,862,060, Cl. 260-7.000.
Anderson, Henry, Jr. Low profile solar ray concentrator. 3,861,379, Cl. 126-271.000.
Anderson, Norman G., to United States of America, Atomic Energy Commission. Method for rapid detection and identification of serological factors. 3,862,303, Cl. 424-12.000.
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Arion, Henri G. Retromammary prosthesis. 3,860,969, Cl. 3-36.000.
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Ashenfarb, Sidney; Weinblatt, Marvin; and Glowzenski, Leonard F., to New Age Mirror and Tile Industries, Inc. Method of making mirrors having randomly reflective decoration. 3,861,989, Cl. 161-4.000.
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Bakti, Istvan, to C. A. V. Limited. Liquid fuel pumping apparatus. 3,861,835, Cl. 417-462.000.
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Barecki, Chester J.; and Waleson, Donald, to American Seating Company. Tote box. 3,861,556, Cl. 220-31.00S.
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Bezerie, Jean Pierre, to Societe Anonyme De Telecommunications. Method for producing at a distance a representation of the path of a point of a structure and device for carrying out said method. 3,862,421, Cl. 250-330.000.

Bibbens, William H.: *See—*
Fleischer, Hans; and Bibbens, William H., 3,861,243.

Biceaga, Viorel: *See—*
Csomontanyi, Georgeta; Mocearov, Vladimir; Panovici, Alexandru; and Biceaga, Viorel, 3,862,207.

Biel, Hans Joachim: *See—*
Zwisler, Oswald; and Biel, Hans Joachim, 3,862,314.

Biermann, David; Grimes, Richard V.; Howe, Gilbert D.; and Critchlow, E. Forest, to Hartzell Propeller, Inc. Aircraft propeller and vibration damper assembly. 3,861,828, Cl. 416-145.000.

Bille, Heinz; Hann, Ernst Wilheim; Luetzel, Gerhard; Schmidt, Guenther; and Voelker, Dieter. Emulsifier compositions for crease-proofing textile materials which contain copolymers of unsaturated carboxylic acids and their esters. 3,862,073, Cl. 260-29.4UA.

Bille, Heinz: *See—*
Petersen, Harro; Bille, Heinz; and Reuss, Guenter, 3,862,224.

Bilsbury, Stephen J., to United States of America, Air Force. Plastic semi armor piercing incendiary projectile. 3,861,311, Cl. 102-52.000.

Bio-Dynamics, Inc.: *See—*
Marsh, Robert Claude, 3,861,894.

Birdwell, J. C. Davit, particularly for marine use. 3,861,534, Cl. 212-1.000.

Bl Py, Alphonse, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Regulating devices for pouring molten metal. 3,861,457, Cl. 164-155.000.

Blackstone Corporation: *See—*
Antonevich, John N.; and Goodfriend, Roger, 3,861,391.

Blankenstein, Gunter: *See—*
Wolf, Gerhard Dieter; Kunzel, Hans Egon; Blankenstein, Gunter; and Bentz, Francis, 3,862,088.

Bleiman, Claude: *See—*
Van Russelt, Michel; Bleiman, Claude; and Mercier, Jean, 3,862,259.

Blenkhorn, Charles W. Receptacle mounted electric clock. 3,861,136, Cl. 58-56.000.

Block, Ira Jordan; and Sokol, Phillip Edward, to Gillette Company, The. Hair spray containing esters of maleic anhydride interpolymers. 3,862,306, Cl. 424-47.000.

Blom, Carl J., to Borg-Warner Corporation. Multistage pump and manufacturing method. 3,861,825, Cl. 415-198.000.

Blomgren, Oscar C., Jr.: *See—*
Blomgren, Oscar C., Sr.; and Blomgren, Oscar C., Jr., 3,862,391.

Blomgren, Oscar C., Sr.; and Blomgren, Oscar C., Jr., to Inter-Probe, Inc. Method and apparatus for removing material from a workpiece. 3,862,391, Cl. 219-68.000.

Blomquist, James E.: *See—*
Wilczewski, Robert H.; and Blomquist, James E., 3,861,510.

Bloom, Joseph Louis, to Lucas Aerospace Ltd. Actuator device for use in a gas turbine engine fuel control system. 3,861,507, Cl. 192-48.500.

Bloom, Joseph Louis, to Lucas Aerospace Limited. Actuator device for use in a gas turbine engine fuel control. 3,861,508, Cl. 192-48.500.

Blum, Albert. Submersible pump with guide means. 3,861,834, Cl. 417-360.000.

Bock, Robert F. Carton. 3,861,582, Cl. 229-45.000.

Boden, Ogden W. Cord locking device with safety latch. 3,861,003, Cl. 24-136.00B.

Boehner, Beat: *See—*
Dawes, Dag; and Boehner, Beat, 3,862,124.
Dawes, Dag; and Boehner, Beat, 3,862,170.

Boehringer Ingelheim G.m.b.H.: *See—*
Bauer, Adolf; Weber, Karl Heinz; Minck, Klaus; and Danneberg, Peter, 3,862,136.

Boehringer Mannheim G.m.b.H.: *See—*
Stork, Harald, 3,862,012.
Wahlefeld, August Wilhelm; Mollering, Hans; Gruber, Wolfgang; Bernt, Erich; and Roeschlau, Peter, 3,862,009.

Boghosian, Edward M., to Standard Oil Company. Oxidation of butane to maleic anhydride. 3,862,146, Cl. 260-346.80A.

Bohme, Ekkehard: *See—*
Davis, D. Barry; Bohme, Ekkehard; and Dolfini, Joseph Edward, 3,862,181.

Boileau, Jacques, to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie. Light-weight heavy-duty radial tire. 3,861,439, Cl. 152-359.000.

Bolli, Peter; and Asper, Jean-Jacques, to Battelle Memorial Institute. Device for applying a protective coating to an immerged surface. 3,860,987, Cl. 15-29.000.

Bolt, Reginald Charles, to Molins Limited. Devices for mean value indication. 3,862,408, Cl. 235-183.000.

Boltz, Duane A.; and Gardner, James J., to Alcan Aluminum Corporation. Carton end-closing apparatus. 3,861,122, Cl. 53-296.000.

Bonwit, Willard R.; Shaurins, Valdis; and Young, Roger W., to John Dusenbery Co., Inc. Apparatus for coating and stacking printed sheets. 3,861,351, Cl. 118-6.000.

Boonstra, Lieuwe: *See—*
Salters, Roelof Herman Willem; Boonstra, Lieuwe; and Lambrechtse, Cornelis Willem, 3,862,435.

Borden, Inc.: *See—*
Hollingsworth, Clinton Allen, 3,862,346.

Borg-Warner Corporation: *See—*
Blom, Carl J., 3,861,825.
Donaldson, Desmond McIntosh; and Millard, Gregory Stephen Trusxott, 3,862,037.
Roberts, Richard W.; and Salle, Ralph D., 3,861,829.

Borg-Warner Ltd.: *See—*
Dibben, David W.; and Bastikar, Madhusudan R., 3,861,518.

Borg-Warner-Stieber GmbH: *See—*
Patzer, Helmut Karl, 3,861,692.

Born, Gunthard, to Messerschmitt-Bolkow-Blohm GmbH. Sighting goniometer. 3,861,806, Cl. 356-152.000.

Boroschewski, Gerhard; and Arndt, Friedrich, to Scherings AG. Phenoxycarboxylic acid amides. 3,862,163, Cl. 260-306.70T.

Borror, Alan L.; Hill, Ruth Linda; and Reid, Jerome L., to Polaroid Corporation. Super-sensitizing dye combination in silver halide emulsions. 3,861,920, Cl. 96-77.000.

Borsum, Alvin H., to Gardner - Denver Company. Control valve for fluid operated tool. 3,861,476, Cl. 173-169.000.

Bose, Ranendra K. Anti-pollution systems for automobiles. 3,861,142, Cl. 60-274.000.

Bosman, Jan: *See—*
Zandstra, Bertrus H.; and Bosman, Jan, 3,862,084.

Bossert, Friedrich; and Vater, Wulf, to Bayer Aktiengesellschaft. 4-Pyridyl substituted 1,4-dihydropyridines. 3,862,161, Cl. 260-295.50R.

Bossert, Friedrich: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,862,162.

Bouillon, Claude; Kalopissis, Gregoire; and Lang, Gerard, to Societe Anonyme dite: L'Oreal. Bactericidal, fungicidal and deodorizing compositions containing derivatives of pyridine n-oxide. 3,862,305, Cl. 424-45.000.

Bourquin, Jean-Pierre; Schwarb, Gustav; and Waldvogel, Erwin, to Sandoz Ltd., (a/k/a Sandoz AG). 4H-benzo[4,5]cyclohepta[1,2-6]thiophenes. 3,862,156, Cl. 260-293.570.

Bovey, Herbert Joseph: *See—*
Coyle, Thomas Joseph; and Bovey, Herbert Joseph, 3,861,903.

Bowell, James P. Animal watering device. 3,861,358, Cl. 119-79.000.

Bower, Warren H., to Beven-Herron, Inc. Pivoted wall anchor device. 3,861,104, Cl. 52-283.000.

Bowlin, Claude W.: *See—*
Lattauzio, Alphonse J.; and Bowlin, Claude W., 3,861,090.

Boyadjieff, George I.; and Otsap, Ben A., to Varco International, Inc. Safety valve for wells. 3,861,464, Cl. 166-224.00A.

Boyer, Emanuel F. Onion skinning machine. 3,861,295, Cl. 99-516.000.

BP Chemicals International Limited: *See—*
Emery, Anthony George Montague; Munday, Charles Walter; and Weaver, David Roland, 3,861,805.
Fry, David Philip, 3,862,064.

Bra-Con Industries, Inc.: *See—*
Considine, Robert W.; and Arthurs, John W., 3,861,297.

Bradley, Robert F. Exercising apparatus simulating weight lifting. 3,861,215, Cl. 73-379.000.

Brandon, William A., Jr.; and Maggiolo, Allison, to Burlington Industries, Inc. Foam backed drapery fabrics and method of making the same. 3,862,291, Cl. 264-321.000.

Braner Engineering Inc.: *See—*
Braner, Harold R.; Jasinski, William C.; Matsunaga, Douglas S.; and Lo Presti, Roy F., 3,861,536.

Braner, Harold R.; Jasinski, William C.; Matsunaga, Douglas S.; and Lo Presti, Roy F., to Braner Engineering Inc. Transporting device for items of coiled material. 3,861,536, Cl. 217-6.00G.

Braun, Anton; and Thun, Oswald, to said Braun, by said Thun. Counterbalanced fixed stroke compressors. 3,861,222, Cl. 74-44.000.

Braun, Anton, to Braun, Anton. Fixed stroke piston machines with improved counterbalancing and driving mechanism. 3,861,223, Cl. 74-44.000.

Braun, Anton: *See—*
Braun, Anton; and Thun, Oswald (assors. to said Braun, by said Thun), 3,861,222.

Bravin, Ben. Transmission member utilizing pivotally interconnected preforms. 3,861,232, Cl. 74-446.000.

Brennan, Harry M.; and Lamb, Douglas P., to Standard Oil Company. Preparation of phthalic anhydride by heating trimellitic acid in the presence of a catalyst. 3,862,145, Cl. 260-346.400.

Breslow, Jeffrey D.; and Kaelin, Bette M., to Marvin Glass & Associates. Chance device for use with board game apparatus. 3,861,686, Cl. 273-138.00R.

Bressanelli, Jerome P., to Crucible Inc. Duplex stainless steel. 3,861,908, Cl. 75-126.00B.

Breuking, Karel Willem; Van Delft, Andries; and Giacino, Christopher, to International Flavors and Fragrances Inc. Edible compositions having a poultry meat flavor and processes for making same. 3,862,343, Cl. 426-211.000.

Bridgeforth, Robert M., Jr.; and Sutherland, George S. Method of propulsion using stable, high energy compositions with hydrazine containing working fluid. 3,861,138, Cl. 60-217.000.

Bridgeport Metal Goods Manufacturing Company, The: *See—*
Vasas, Martin M., 3,861,810.

Bridgestone Liquefied Gas Company, Ltd.: *See—*
Yamamoto, Katsuro, 3,861,021.
Yamamoto, Katsuro, 3,861,553.

Bridgestone Tire Company Limited: *See—*
Ochiai, Koichiro; and Takahashi, Makoto, 3,861,440.

Brienza, Michael J., to United Aircraft Corporation. Apparatus for providing pulses having electronically variable characteristics. 3,862,413, Cl. 250-199.000.

Brink, Robert H., Jr.; Shema, Bernard F.; and Justice, Roger L., to Betz Laboratories, Inc. Dioxide slime control composition and its use. 3,862,323, Cl. 424-275.000.

Brink, Robert H., Jr.: *See—*
Shema, Bernard F.; and Brink, Robert H., Jr., 3,862,034.
Shema, Bernard F.; Brink, Robert H., Jr.; Swered, Paul; and Justice, Roger L., 3,862,322.
Swered, Paul; Shema, Bernard F.; and Brink, Robert H., Jr., 3,862,324.

Brinkley Company, The: *See—*
Baxter, Bobby G.; and Schmitt, Earl W., 3,861,716.

Briskin, Theodore S.; and Sabherwal, Inderjit H. Smokable tobacco substitute material and method. 3,861,401, Cl. 131-2.000.

Briskin, Theodore S., to Sutton Research Corporation. Smokable material and method for preparation of same. 3,861,402, Cl. 131-2.000.

Bristol-Myers Co.: *See—*
Silvestri, Herbert Horatius, 3,862,186.

British Ropes Limited: *See—*
Mason, Thomas Ernest; Fox, Cyril; and Campbell, Robert Edward, 3,861,811.

British Steel Corporation: *See—*
Maltby, Jack; and Stubbs, Dennis, 3,861,190.

Britsch, William G.: *See—*
Dale, William L.; Britsch, William G.; and O'Dell, Charles E., 3,861,092.

Broadrick, Ed B.; and Reid, Ralph T., to Burlington Industries, Inc. Method and apparatus for eliminating static charges in pile fabric. 3,861,429, Cl. 139-391.000.

Brockett, Bruce W. Pressure-sensitive record sheet. 3,861,941, Cl. 117-36.200.

Broeker, Russell E.: *See—*
Evans, Thomas K.; and Broeker, Russell E., 3,861,714.

Brooks, Billy S., to Interstate Electronics Corporation. Data reordering system. 3,862,406, Cl. 235-152.000.

Brooks, Frank W.; and Baber, James R., to General Motors Corporation. Disc brake drive. 3,861,501, Cl. 188-18.00A.

Brovoll, Oskar, to Thune-Eureka A/S. Tensioning apparatus for blanket and wires in paper machines. 3,861,230, Cl. 74-241.000.

Brown, Clarence Eugene; and Stephens, William A. Safety helmet. 3,860,966, Cl. 2-3.00R.

Brown, Dwight C. Lightweight corrugated pallet. 3,861,326, Cl. 108-51.000.

Brown, Edward Douglas; and Clarkson, Richard, to Imperial Chemical Industries Limited. Process for the production of cyclopentene intermediate and intermediates obtained therefrom. 3,862,178, Cl. 260-240.00R.

Brown Engineering Company, Inc.: *See—*
Neuffer, Bruce H., 3,861,141.

Brown, Richard E.: *See—*
Klutchko, Sylvester; Brown, Richard E.; and Von Strandtmann, Maximilian, 3,862,143.

Brown, Ted R. Air conditioning process. 3,861,164, Cl. 62-91.000.

Brownlee, John: *See—*
Price, Richard Thompson; Bauer, Stuart Michael; Brownlee, John; and Goverde, Bastiaan Cornelis, 3,862,302.

Bruckner, Norman: *See—*
Vaillancourt, Vincent L.; Bruckner, Norman; and Levine, Edward, 3,861,396.

Brundage, R. Pauline: *See—*
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Bruno, Gerald A.; Haney, Thomas A.; and Rajamani, Puthucode N., to E. R. Squibb & Sons, Inc. Technetium-99m albumin aggregates. 3,862,299, Cl. 424-1.000.

Brunt, Geoffrey Albert Kenyon: *See—*
Williams, Malcolm; Brunt, Geoffrey Albert Kenyon; and Jones, Christopher Robin, 3,861,363.

Bruun & Sorensen AB: *See—*
Nobelius, Gustav, 3,861,604.

Buben, David; Bearden, Roby, Jr.; and Wristers, Harry Jan, to Exxon Research and Engineering Company. Modified ziegler catalyst for alpha olefin wax synthesis. 3,862,257, Cl. 260-683.15D.

Bucher, Jeffry C. Remote starting system for diesel engines. 3,862,429, Cl. 290-37.000.

Bucil, Frantisek: *See—*
Musil, Peter; Bucil, Frantisek; Spatenka, Karel; and Rysavy, Miroslav, 3,861,426.

Buck, Norman, Jr. Composite diving board. 3,861,674, Cl. 272-66.000.

Bue, Richard C.; and Wilson, Kermit H., to Sico Incorporated. Convertible folding table-carrel unit. 3,861,325, Cl. 108-13.000.

Buendia, Jean: *See—*
Martel, Jacques; Buendia, Jean; and Costerousse, Germain, 3,862,160.

Buffa, Aldo; and Holliger, Adolf, to Unicef, Aldo Buffa and Gebruder Buehler AG. Apparatus for making foods and feeds. 3,861,293, Cl. 99-484.000.

Bunn-O-Matic Corporation: *See—*
Martin, John C., 3,861,285.

Burchard, Peter; and Schreiber, Adolf, to Daimler-Benz Aktiengesellschaft. Shifting gear for the steering system of vehicle wheels. 3,861,705, Cl. 280-91.000.

Burgess, John R.: *See—*
Story, Paul R.; Whited, E. A.; Alford, J. A.; Ray, Wesley C.; and Burgess, John R., 3,862,142.
Burgess Vibrocrafters, Inc.: *See—*
Simmons, Frank A., 3,861,194.
Burke, Edward F., Jr.; and Czumak, Frank M., to Polaroid Corporation. Film handling cassette employing film cleaning and developing arrangements. 3,861,791, Cl. 352-130.000.
Burke, Oliver W., Jr. Process for converting coarse aqueous polymer emulsion to fine emulsion. 3,862,078, Cl. 260-29.60R.
Burlington Industries, Inc.: *See—*
Brandon, William A., Jr.; and Maggiolo, Allison, 3,862,291.
Broadrick, Ed B.; and Reid, Ralph T., 3,861,429.
Burroughs Corporation: *See—*
Horak, Anthony, 3,861,614.
Rosseli, Allen J., 3,862,437.
Burroughs, Louis, to Electro-Voice, Incorporated. Floor wave microphone stand. 3,862,377, Cl. 179-146.00R.
Burroughs Wellcome Co.: *See—*
Elion, Gertrude B.; DeMiranda, Paulo M. S.; and Beacham, Lowrie M., III, 3,862,061.
Harfenist, Morton, 3,862,226.
Burtz, Mildred V. Disposable suture organizer. 3,861,521, Cl. 206-63.300.
Busch, Heinrich, to GES Gesellschaft fur elektrischen Strassenverkehr GmbH. Electric motor vehicle and drive system therefor. 3,861,485, Cl. 180-65.00R.
Bushick, Ronald D.: *See—*
Norton, Richard V.; and Bushick, Ronald D., 3,862,202.
Bushin, Alexandr Nikitich: *See—*
Isailingold, Anatoly Lvovich; Levin, Veniamin Anatolievich; Pilipenko, Fedor Semenovich; Vernova, Tatyana Pavlovna; Stepanov, Gennady Arkadievich; Bushin, Alexandr Nikitich; Sirotkin, Boris Vasilievich; Kozin, Valentin Vasilievich; Basner, Mark Ekhetskelevich; Erofeeva, Aida Vladimirovna; Peshkova, Nina Prokopievna; Tuktarova, Luiza Saidovna; Kirnos, Yakov Yakovlevich; Mikhailov, Ruslan Konstantinovich; Dolinin, Nikolai Zakharovich; Rastvorov, Jury Nikolaevich; and Eratova, Valeria Lvovna, 3,862,256.
Bushinsky, George B. Packing extractor. 3,861,248, Cl. 81-8.100.
Butcher, Alvin E., to Phillips Petroleum Company. Four bar linkage for inserts for blow molding molds. 3,861,845, Cl. 425-302.00B.
Butler, Warren H. Golf training device. 3,861,688, Cl. 273-183.00B.
Butt, Sheldon H.: *See—*
Popplewell, James M.; and Butt, Sheldon H., 3,861,884.
Butts, Philip G.: *See—*
Baumgartner, Walter E.; and Butts, Philip G., 3,861,970.
C. A. V. Limited: *See—*
Bakti, Istvan, 3,861,835.
Williams, Malcolm; Brunt, Geoffrey Albert Kenyon; and Jones, Christopher Robin, 3,861,363.
Cadiou, Jean, to S. A. Automobiles. Batteries composed of fuel cells. 3,861,959, Cl. 136-86.00F.
Cain, Jack C. Card reading method and apparatus. 3,862,399, Cl. 235-61.11D.
Cairns, James: *See—*
Woods, Gilbert Frederick; Cairns, James; and McGarry, George, 3,862,194.
Calcagno, Benedetto; Divo, Claudio; and Ghirga, Marcello, to Societa italiana S.p.A. Process for preparing vinyl acetate. 3,862,216, Cl. 260-497.00A.
California Pellet Mill Company: *See—*
Whelan, John C., 3,861,058.
Calvert, Rodney K., to Mead Corporation, The. Article carrier. 3,861,530, Cl. 206-499.000.
Cam Gears Limited: *See—*
Adams, Frederick John, 3,861,764.
Cameron Iron Works, Inc.: *See—*
Furth, Werner F.; and Benson, Paul R., 3,860,983.
Campagnuolo, Carl J.; and Sieracki, Leonard, to United States of America, Army. Acoustical fuze activator. 3,861,313, Cl. 102-70.20G.
Campbell, Everett W.; and Traina, Carl E., to Goodyear Tire & Rubber Company, The. Method of recovering polymer from its solution. 3,862,103, Cl. 260-94.70R.
Campbell, Robert Edward: *See—*
Mason, Thomas Ernest; Fox, Cyril; and Campbell, Robert Edward, 3,861,811.
Campbell, Robert W.; and Moberly, Charles W., to Phillips Petroleum Company. Arylene sulfide polymers. 3,862,095, Cl. 260-79.100.
Canadian Patents and Development Limited: *See—*
Smirnoff, Vladimir A., 3,862,007.
Canevello, Victor A.: *See—*
Rhoads, Delmar Dean; MacKay, Robert H.; Krimmel, Gary W.; and Canevello, Victor A., 3,861,378.
Canter, Marvin R.; Canter, Stantion R.; and Shuken, Robert A. Orthodontic elastic inserter tool. 3,861,045, Cl. 32-66.000.
Canter, Stantion R.: *See—*
Canter, Marvin R.; Canter, Stantion R.; and Shuken, Robert A., 3,861,045.
Canup, Robert E., to Texaco, Inc. Ignition-control system for internal combustion engines. 3,861,369, Cl. 123-148.00E.
Cappell, Robert J.: *See—*
Banks, Willard K.; and Cappell, Robert J., 3,862,420.
Capra, Peter, to Sola Basic Industries Inc. Electrical connector with strain relief. 3,861,778, Cl. 339-103.00R.
Carborundum Company, The: *See—*
Richmond, Wesley Q.; and Cichy, Paul, 3,861,849.
Carden, Edward. Anaesthetist's ventilation. 3,861,385, Cl. 128-145.800.
Cardiodynamics, Inc.: *See—*
Lawhorn, Richard D.; and Nelson, Robert L., 3,861,387.
Carlson, Elmer A., to International Telephone and Telegraph Corporation. Temperature control system and thermostat therefor. 3,861,589, Cl. 236-68.00B.
Caroselli, Danilo, to Tapira Establishment. Panel assembling and fastening device. 3,861,112, Cl. 52-758.00D.
Carpenter, Louis M.; and Dunn, Kenneth L., to Carpenter Manufacturing Co., Inc. Manually operated cut-off tool. 3,861,262, Cl. 83-642.000.
Carpenter Manufacturing Co., Inc.: *See—*
Carpenter, Louis M.; and Dunn, Kenneth L., 3,861,262.
Carpenter Technology Corporation: *See—*
Caton, Robert L., 3,861,909.
Carpenter, Walter H. Method and apparatus for making block ice. 3,861,163, Cl. 62-73.000.
Carr, Albert A.; and Kinsolving, C. Richard, to Richardson-Merrell Inc. Olefinic 4-substituted piperidino derivatives. 3,862,173, Cl. 260-240.00R.
Carroll, Mark T.: *See—*
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Carter, Marvin V. Below ground lifting apparatus. 3,861,544, Cl. 214-394.000.
Cass, David T., to Robbins Company, The. Earth boring machine and method. 3,861,748, Cl. 299-10.000.
Casternovia, Samuel E. Portable hydrotherapeutic device. 3,861,384, Cl. 128-66.000.
Castner, Charles S., to Schuyler Development Corporation. Cocoa butter composition and method of making the same. 3,862,197, Cl. 260-418.000.
Catalin Limited: *See—*
Standen, Colin John Smeed; and Phillips, William Sidney, 3,862,080.
Caterpillar Mitsubishi Ltd.: *See—*
Sugimura, Ryo, 3,861,505.
Caterpillar Tractor Company: *See—*
Choate, Richard V.; and Williamson, Leonard W., 3,861,019.
Dean, Robert C., Jr., 3,861,826.
Freedy, Allan L.; Muller, Thomas P.; and Popdan, Gary L., 3,861,762.
Hall, Gerald D.; Hein, Allyn J.; Johnson, Howard L.; and Junck, John A., 3,861,145.
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Caton, Robert L., to Carpenter Technology Corporation. High strength steel alloy. 3,861,909, Cl. 75-128.00B.
Caves, Lawrence C., Jr.: *See—*
Patterson, Merle W.; and Caves, Lawrence C., Jr., 3,861,097.
Cawley, John Duval, to Eastman Kodak Company. Block copolyesters of polysiloxanes as additives to photoconductive layers. 3,861,915, Cl. 96-1.500.
Celanese Corporation: *See—*
Munoz, Edward, 3,862,090.
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Celanese Corporation of America: *See—*
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Celmac A.G.: *See—*
Cooper, Edwin Frank, 3,861,154.
Cericola, Robert F.: *See—*
Peabody, Bayard W.; and Cericola, Robert F., 3,861,827.
Cerino, Michael J. Safety razor with replaceable blade and carrier assembly. 3,861,034, Cl. 30-58.000.
Ceskoslovenska akademie ved: *See—*
Wichterle, Otto, 3,861,416.
CGR Medical Corporation: *See—*
Thomas, Eugene P., 3,862,426.
Chacon, Manuel Frank; and Wolters, Frederick J., to Johnson Service Company. Remote time clock system with standby power means. 3,861,134, Cl. 58-24.000.
Chalupa, William V.; Chow, Alfred W.; and Parish, Roger C., to Smith-Kline Corporation. Methods and compositions for inhibiting rumen microbial deamination. 3,862,333, Cl. 424-353.000.
Changani, Pushpkumar Dewanmal, to Monsanto Chemicals Limited. Tobacco smoke filter. 3,861,404, Cl. 131-269.000.
Charles, Wesley N.; Panaia, Robert L.; and Hunter, Bruce H., to Charles, Wesley N.; and Panaia, Robert L. Shears. 3,861,038, Cl. 30-261.000.
Chassagne, Daniel; Delouche, Gilles; Fradin, Jean; and Rocoplan, Jean-Antoine, to Commissariat a L'Energie Atomique. Radioactive source projector. 3,861,380, Cl. 128-1.200.
Chemed Corporation: *See—*
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Chemetron Corporation: *See—*
Albright, Charles Jere; Fitch, Clifford E., Sr.; and Fitch, Clifford E., Jr. (said Albright assors. to), 3,861,286.
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Henschler, Dietrich; Wagner, Josef; and Hampel, Hans, 3,862,213.
Chemische Fabrik Budenheim Rudolf A. Oetker: *See—*
Beltz, Klaus; Frankenfeld, Klaus; and Gotzmann, Karl, 3,862,298.

Chernish, Stanley M.; and Miller, Roscoe E. Glucagon as a diagnostic aid in gastrointestinal radiology. 3,862,301, Cl. 424-4.000.
Cheron, Jacques, to Institut Francais du Petrole des Carburants et Lubrifiants. Process and devices for recovering electrolyte leaks in a fuel cell. 3,861,958, Cl. 136-86.00R.
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Chida, Yoshinori; and Mizutani, Seiki, to Kabushiki Kaisha Suwa Seikosha. Rotary print drum having an intermittent drive. 3,861,300, Cl. 101-93.00C.
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Greco, Francesco; Longi, Paolo; D'Angelo, Romano; Chiolle, Antonio; and Credali, Lino, 3,862,059.
Chiou, Charles, to International Business Machines Corporation. Electrophotographic charge generation layer. 3,861,913, Cl. 96-1.500.
Chiswell, Earl; and McMaster, Clarence O., to Minnesota Mining and Manufacturing Company. Camera. 3,861,799, Cl. 355-64.000.
Choate, Richard V.; and Williamson, Leonard W., to Caterpillar Tractor Company. Machine for joining a cross member to a base element. 3,861,019, Cl. 29-208.00E.
Chomerics, Inc.: *See—*
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Christenson, Harlan B., to Berkley & Company, Inc. Reinforced tow handle. 3,861,347, Cl. 115-6.100.
Christianson, Robert W., to Whirlpool Corporation. Adjustable time timing gear for timing apparatus. 3,861,238, Cl. 74-568.00T.
Christie, Joe William. Split-sleeve pipe device. 3,861,422, Cl. 138-99.000.
Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., to Kao Soap Co., Ltd. Secondary recovery composition comprising water, hydrocarbon solvent and colloidal silica. 3,862,044, Cl. 252-8.55D.
Ciba-Geigy AG: *See—*
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Clar, Milton. Apparatus for the compaction of refuse material and the like. 3,861,296, Cl. 100-53.000.
Claridge, Maurice Arthur; and Pearse, Richard Vyvian, to Laporte Industries Limited. Manufacture of pigmentary titanium dioxide. 3,862,297, Cl. 423-615.000.
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Clark, Robert M., to Permali Incorporated. Separable electrical connector. 3,861,777, Cl. 339-92.00R.
Clark, Vincent De Paul, to Owens-Corning Fiberglas Corporation. Coating composition. 3,861,425, Cl. 138-149.000.
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Cognet, Guy Henri. All-weather parasol. 3,861,410, Cl. 135-20.00R.
Cohen, Marvin P.; and Von Strandtmann, Max, to Warner-Lambert Company. 2-Hydroxy-2-(methylsulfonyl)-acetophenone acetates and related compounds. 3,862,214, Cl. 260-479.00R.
Cohen, Peter J.; and Ackerman, Phillip W., to Databit Incorporated. Adaptive sampling rate time division multiplexer and method. 3,862,373, Cl. 179-15.0BV.
Coldren, Kenneth M. Method and apparatus for treating whole feed grain. 3,861,294, Cl. 99-516.000.
Coleman, Eugene W., to Picker Corporation. Package and method of making. 3,861,529, Cl. 206-471.000.
Coleman, James F. Portable sectional game board. 3,861,524, Cl. 206-315.000.
Collin, Herbert S. Packing wedge. 3,861,525, Cl. 206-320.000.
Collins, Joseph C., to Sterling Drug Inc. 3,3-Dichloro-2-oxopolymethylenimines. 3,862,172, Cl. 260-239.30R.
Collister, Frank C. Key bolt. 3,861,267, Cl. 85-3.00R.
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Conley, Cecil. Operator alerting device. 3,861,349, Cl. 116-114.00R.
Connole, Kent Brian; and Townsend, Wesley Peter, to Western Electric Company, Incorporated. Method of joining two bodies after treatment with an inorganic colloid. 3,861,978, Cl. 156-308.000.
Conover, Lloyd H.; and Woodward, Robert B., to Pfizer Inc. D-ring substituted tetracyclines. 3,862,225, Cl. 260-559.0AT.
Considine, Robert W.; and Arthurs, John W., to Bra-Con Industries, Inc. Baler. 3,861,297, Cl. 100-53.000.
Construction Specialties, Inc.: *See—*
Bartlett, Gary F., 3,861,110.
Conte, Georges; Royer, Pierre; and Narboux, Edmond, to Mecoutil Societe a Responsibilite Limitee. Weft-injection system for shuttleless loom. 3,861,428, Cl. 139-126.000.
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Cooksey, William Harold; Cleaver, Brian William; and Groom, Walter Joseph, to Joseph Lucas (Electrical) Limited. Cam assembly. 3,861,171, Cl. 64-25.000.
Cooley, Stone D.; and Schwartz, Andrew K., Jr., to Petro-Tex Chemical Corporation. Maleic anhydride process. 3,862,147, Cl. 260-346.80M.
Cooper, Edwin Frank, to Celmac A.G. Tunnelling. 3,861,154, Cl. 61-45.00R.
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Cooper, Michael T., to United States of America, Navy. Vapor pressure regulator. 3,861,161, Cl. 62-50.000.
Cooper, Robin D. G., to Eli Lilly and Company. Thiazolidine azetidinones. 3,862,164, Cl. 260-306.70C.

Coran, Aubert Yaucher; and Kerwood, Joseph Edward, to Monsanto Company. Composition of poly(thioamides) and accelerator. 3,862,051, Cl. 252-182.000.

Coriasco, Peter; and Haselbarth, Heinz, to Supreme Equipment & Systems Corporation. Label-making machine. 3,861,512, Cl. 197-55.000.

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Corneau, George E.: *See—*
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Cornell, Paul A., to Electro-Clamp Corporation. Cable connector with five point grip and non-twist, non-pullout function and with ratchet latch. 3,861,771, Cl. 339-95.00R.

Corsini, John M.; and Tipple, William R., to Uncas Manufacturing Company. Display cabinet. 3,861,766, Cl. 312-125.000.

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Costello, Albert D. Toilet flushing assembly. 3,860,972, Cl. 4-67.00R.

Costello, Albert D. Cup lids for use with teabags and the like. 3,861,284, Cl. 99-321.000.

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Cotrel, Claude; Jeanmart, Claude; and Messer, Mayer Naoum, to Rhone-Poulenc S.A. Pyrrolo (3,4-b) pyrazine derivatives. 3,862,149, Cl. 260-268.0BQ.

Couchman, Richard, to Aluminum Company of America. Method of fabricating compacted powdered metal extrusion billets. 3,862,286, Cl. 264-111.000.

Coupco Limited: *See—*
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Courboulay, Pierre; Cretin, Jacques; Anceau, Francois; and Beauducel, Claude, to Institut Francais du Petrole des Carburants et Lubrifiants. Device for carrying out arithmetical and logical operations. 3,861,585, Cl. 235-164.000.

Courtenay, Jerzy Leon; and Craven, Donald, to Lucas Aerospace Ltd. Apparatus for simulating the effects of aerodynamic forces on aircraft control. 3,861,065, Cl. 35-12.00W.

Covey, Rupert A.; Smith, Allen E.; and Hubbard, Winchester L., to Uniroyal, Inc. Substituted phenylethyl sulfites useful for controlling mites. 3,862,327, Cl. 424-303.000.

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Coyle, Thomas Joseph; and Bovey, Herbert Joseph, to Anglo American Corporation of South Africa Limited. Upgrading of chromite and other ferruginous ores. 3,861,903, Cl. 75-1.000.

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Cramers, Constant M. A., to Stamicarbon B.V. Process for the preparation of cyclopentadienes. 3,862,253, Cl. 260-666.00A.

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Crary, Ely J. Process for treating the skin for relieving symptoms caused by poison ivy and poison oak. 3,862,331, Cl. 424-331.000.

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Crowder, Wyly Kenneth. Closed loop transit systems. 3,861,317, Cl. 104-88.000.

Crowe, Talmadge L., to Baker Oil Tools, Inc. Tubing spacing means for subsurface valves. 3,861,463, Cl. 166-.500.

Crucible Inc.: *See—*
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Cruz, Mamerto M., Jr.; Erdi, Nicholas Z.; and Battista, Orlando A., to FMC Corporation. Microcrystalline polyolefins and dispersions thereof. 3,862,069, Cl. 260-28.50A.

Cryton Optics, Inc.: *See—*
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Csomontanyi, Georgeta; Mocearov, Vladimir; Panovici, Alexandru; and Biceaga, Viorel. Process for preparing high-porosity catalysts for the dehydrogenation. 3,862,207, Cl. 252-470.000.

Culpepper, James H. Practice tethered ball. 3,861,679, Cl. 273-29.00A.

Currell, Richard W.; Olah, Louis; and Vogel, Charles A., to Newell Industries Inc. Method of forming a motor control rotor element. 3,862,289, Cl. 264-272.000.

Currin, Cedric G.: *See—*
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Curtice, Beverly A.; and Hughes, James W., to Texaco Inc. Method for stabilizing incompetent sand containing formations. 3,861,468, Cl. 166-276.000.

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Dai Nippon Printing Company Limited: *See—*
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Dale, William L.; Britsch, William G.; and O'Dell, Charles E. Molded storage housing for a motorcycle. 3,861,092, Cl. 52-66.000.

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Damuth, K. Joseph, to General Electric Company. Invertable carded blister package. 3,861,528, Cl. 206-463.000.

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Danielson, Arthur C.; and Ahnehmiller, James, to Uniroyal, Inc. Process of detackifying rubber. 3,861,950, Cl. 117-139.000.

Danly, James C., to Danly Machine Corporation. Friction drive loader. 3,861,322, Cl. 104-166.000.

Danly Machine Corporation: *See—*
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Danneberg, Peter: *See—*
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Dansereau, Raymond R., to Beatrix Jewelry Company. Earring having tubular end portions secured by cast material. 3,861,169, Cl. 63-12.000.

Danton, Jean Louis, to Etablissements Compin. Adjustable seat for railway carriages and the like. 3,861,743, Cl. 297-329.000.

Data Card Corporation: *See—*
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Cohen, Peter J.; and Ackerman, Phillip W., 3,862,373.

Dau, Matthew L., to Perfect Seal Window Inc. Pivoted removable sash type window. 3,861,082, Cl. 49-181.000.

David, Vernon J. Electric motor orbitor structure. 3,862,442, Cl. 310-46.000.

Davidson, Donald R.; and Wilson, Edmund B., III, to Singer Company, The. Bobbin selectable to vary lower thread tension. 3,861,617, Cl. 242-118.400.

Davis, Charles W.: *See—*
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Davis, D. Barry; Bohme, Ekkehard; and Dolfini, Joseph Edward, to E. R. Squibb & Sons, Inc. Process for preparing cephalosporins. 3,862,181, Cl. 260-243.00C.

Davis, Dennis J.: *See—*
McNamara, Mary T.; Davis, Dennis J.; Oglesbee, John W.; Krawczak, Gale F.; and McKinnon, Donald J., 3,861,759.

Davis, George B., Jr. Hand-held electric caulking gun. 3,861,567, Cl. 222-333.000.

Davis, George B., Jr. Christmas tree lighting control. 3,862,434, Cl. 307-132.000.

Davis, John Howard, to Imperial Chemical Industries Limited. Production of fibre reinforced thermoplastic materials. 3,862,287, Cl. 264-131.000.

Davis, Robert L.: *See—*
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Dawes, Dag; and Boehner, Beat, to Ciba-Geigy Corporation. Triazolylthiophosphoric acid esters. 3,862,124, Cl. 260-308.00R.

Dawes, Dag; and Boehner, Beat, to Ciba-Geigy Corporation. Triazolylphosphoric acid esters. 3,862,170, Cl. 260-308.00R.

Dawson, Thomas L.; and Hanna, Russell J., to Union Carbide Corporation. Preparation of vinyl chloride polymers in aqueous dispersion with alpha halogen substituted unsymmetrical diacyl peroxide initiator. 3,862,076, Cl. 260-29.60R.

Dazey Products Company: *See—*
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De Laval Turbine Inc.: *See*—
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Deal, Robert S., to Multilam Corporation. Electrical conductor with standoff means. 3,861,595, Cl. 339-95.00R.
Deal, Robert S., to Multilam Corporation. Electrical connector with terminal lock means. 3,861,776, Cl. 339-74.00R.
Dean, Robert C., Jr., to Caterpillar Tractor Co. Cascade diffuser having thin, straight vanes. 3,861,826, Cl. 415-211.000.
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De Corpo, James J.; McDowell, Michael V.; and Saalfeld, Fred E., to United States of America, Navy. General purpose analyzer for plasma media. 3,861,878, Cl. 23-253.0PC.
Deets, John L.; and Jugovic, Zvonimir T., to United States Steel Corporation. Expansive cement and its method of manufacture. 3,861,929, Cl. 106-89.000.
DeFilippi, Quinto. Refuse disposal apparatus. 3,861,117, Cl. 53-124.00B.
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Dempsey, John P. Ladder leveler. 3,861,500, Cl. 182-204.000.
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DeNobriga, Frank H.; and Neal, Richard D., to Eastman Kodak Company. Flame-resistant textile foundation fabric. 3,861,992, Cl. 161-67.000.
De Palma, Joseph S. Combination dual tubular pressure storage means and discharge for fire extinguishers and like apparatus. 3,861,474, Cl. 169-75.000.
De Rooij, Abraham H.; and Elmendorp, Jan, to Stamicarbon B.V. Continuous preparation of cyclohexanone oxime. 3,862,230, Cl. 260-566.00A.
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Deschamps, Andre: *See*—
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Deutsch, Herman, to Tele-Resource, Inc. Branch exchange including electronic timer. 3,862,372, Cl. 179-15.0AT.
De Vries, Gerhard Heinrich Friedrich; and Haans, Petrus Franciscus Antonius, to U.S. Philips Corporation. Gas discharge panel. 3,862,447, Cl. 313-220.000.
De Vries, Jonathan W.; Juaire, Phillip R.; and Morse, David S., to Satellite Industries, Inc. Recirculating flush toilet. 3,860,974, Cl. 4-115.000.
Dewan, Rajinder N., to United States of America, Navy. Ultra-low flow velocity current meter. 3,861,211, Cl. 73-194.00A.
De Witte, Raymond E., to Coca-Cola Co., The. Standard bulk cart. 3,861,704, Cl. 280-79.300.
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Diamond, Norman. Modular seat for public use. 3,861,747, Cl. 297-452.000.
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Dibben, David W.; and Bastikar, Madhusudan R., to Borg-Warner Ltd. Conveying apparatus. 3,861,518, Cl. 198-151.000.
Di Carlo, James, to du Pont de Nemours, E. I., and Company. Aqueous Thermosetting Acrylic Enamel Containing Metallic Flake Pigment. 3,862,071, Cl. 260-29.4UA.
Diehl, Francis Louvaine: *See*—
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Diener, Leslie J., to Omark Australia, Ltd. Self-locking fixing member. 3,861,636, Cl. 248-343.000.
Dietrich, Otto E. Taper gauge. 3,861,047, Cl. 33-174.00E.
Di Giulio, David Neil, to Procter & Gamble Company, The. Dentifrices containing a cationic therapeutic agent and improved silica abrasive. 3,862,307, Cl. 424-52.000.
Dill, Hans G.; Leupp, Alex M.; and Erb, Darrell M., to Hughes Aircraft Company. Liquid crystal display featuring self-adjusting mosaic panel. 3,861,783, Cl. 350-160.0LC.
Dill, Hans G.; Ernstoff, Michael N.; Finnila, Ronald M.; Hoffman, William C.; Leupp, Alex M.; and Winner, Richard N., to Hughes Aircraft Company. Liquid crystal display system with integrated signal storage circuitry. 3,862,360, Cl. 178-7.30D.
Di Marzio, Emilio; and Spiazzi, Ivo, to S.p.A., Firma. Machine for printing multi-line texts of alphabetical and numerical characters on a document. 3,861,301, Cl. 101-93.080.
Dirks, Jan. Toilet diaper net. 3,860,971, Cl. 4-1.000.
Divo, Claudio: *See*—
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Dixon, Dale D.; Manly, Donald G.; and Recktenwald, Gerald W., to Air Products and Chemicals, Inc. Process for producing blow molded thermoplastic articles having improved barrier properties. 3,862,284, Cl. 264-83.000.
Dixon, George D.; Mendelsoh, Morris A.; and Ruffing, Charles R., to Westinghouse Electric Corporation. High temperature brushing compound. 3,862,083, Cl. 260-40.00R.
Dixson, Donn Lewis; and Roche, Bernard Anthony, to Combustion Engineering, Inc. Ion exchange waste water treatment process. 3,862,032, Cl. 210-33.000.
Dr. Ing. Manfrid Dreher KG: *See*—
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Doi, Tadashi, to Kao Soap Co., Ltd. Asphalt having high adhesion strength and its preparation. 3,861,933, Cl. 106-273.00N.
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Domaas, Perry M., to Textron Inc. Centrifugal clutch. 3,861,229, Cl. 74-230.17E.
Domenighetti, Domenico. Apparatus for measuring in situ the permeability of a civil engineering working stratum. 3,861,196, Cl. 73-38.000.
Dominy, Beryl William: *See*—
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Donaldson, Desmond McIntosh; and Millard, Gregory Stephen Truxott, to Borg-Warner Corporation. Fluid diverter device. 3,862,037, Cl. 210-152.000.
Donati, William R. Automatically activated audio-visual device. 3,861,792, Cl. 353-15.000.
Doncer, Alex J.; and White, Harold R., to Alar Engineering Corporation. Gasoline vapor recovery system and method. 3,861,890, Cl. 55-88.000.
Dooley, James L.; and Harasta, Clarence J., to McCullock Corporation. Lightweight chain saw with engine restarting system and method and apparatus for restarting a warm internal combustion engine. 3,861,374, Cl. 123-179.00S.
Dorfel, Gerhard Walter, to A. Ahlstrom Osakeyhtio. Paper web transfer system carrying the web from forming wire to press section. 3,861,996, Cl. 162-274.000.
Dorion, Francis W., Jr., to Gillette Company, The. Plural edge blade unit. 3,861,040, Cl. 30-346.580.
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Doschko, Werner, to Imperial Chemical Industries Limited. Production of texturised yarn. 3,861,129, Cl. 57-34.0HS.
Dossier, Michel, to Lucas Aerospace Limited. Friction free wheels provided with disengagement or locking reversal means. 3,861,506, Cl. 192-43.000.
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Druyts, Romain, to Quepar S.A. Package for liquid or solid materials. 3,861,577, Cl. 229-7.00R.
Dubberke, Gail S. Bale transporting and unrolling device. 3,861,616, Cl. 242-86.50R.
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Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Frumkin, Mikhail Evseevich; and Mirchevsky, Petr Nikolaevich. Device for collecting piles of printed matter into bundles. 3,861,537, Cl. 214-6.0BA.
Dudrey, Denis J., to Donaldson Company, Inc. Self-purging centrifuge. 3,861,584, Cl. 233-7.000.
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Dujardyn, Raoul C. Connection fitting for water treatment apparatus. 3,861,418, Cl. 137-590.000.
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Durkee, Donald D. Ski clamping device. 3,861,664, Cl. 269-43.000.
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McConnell, Richard L.; Taylor, Robert B.; and Grant, Peter M., 3,862,266.
Eaton, Milton, to General Electric Company. Htw heating systems having electrode boilers as the source of htw. 3,862,395, Cl. 219-284.000.
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Edick, John D., to Reliance Electric Company. Cooling means for bearing structure in dynamoelectric machine. 3,862,443, Cl. 310-57.000.
Edwards, James Byrd; and Diehl, Francis Louvaine, to Procter & Gamble Company, The. Fabric softening compositions containing water-insoluble particulate material and method. 3,861,870, Cl. 8-115.600.
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Eichenberger, Kurt; and Egli, Christian, to Ciba-Geigy Corporation. Propionic acid for treating hypertension. 3,862,329, Cl. 424-319.000.
Eichhorn, Dorothea F. Boiled egg shell peeler. 3,861,036, Cl. 30-120.100.
Eisenlohr, Karl Heinz; Grosshans, Winfried A.; and Nakajima, Toshiyuki, to Air Products and Chemicals, Inc.; Nippon Petrochemicals Company Ltd.; and Metallgesellschaft Aktiengeselleschaft. Production of aromatic hydrocarbons. 3,862,254, Cl. 260-674.0SE.
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Elion, Gertrude B.; DeMiranda, Paulo M. S.; and Beacham, Lowrie M., III, to Burroughs Wellcome Co. Imidazole derivatives. 3,862,061, Cl. 260-112.500.
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Ellerd, Charles J. Power driven articulated container transporting device. 3,861,545, Cl. 214-512.000.
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Elsner, Peter. Programmable question and answer game. 3,861,063, Cl. 35-9.00R.

Elsworth, Robert M., to General Electric Company. Box positioning apparatus and method for use thereof. 3,861,543, Cl. 214-303.000.

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Emco Limited: *See—*
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Emery, Anthony George Montague; Munday, Charles Walter; and Weaver, David Roland, to BP Chemicals International Limited. Radiation analyzers. 3,861,805, Cl. 356-116.000.

Emery, Raymen F.: *See—*
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Engelhart, Donald Spencer; and Engelhart, Ned Henry. Method for flash calcining inorganic materials. 3,862,294, Cl. 423-155.000.

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England, Robert C. Method of making contact lens. 3,861,089, Cl. 51-284.000.

Englesson, Bertil; Eriksson, Karl-Ingvar; Kallstrom, Willy; and Stahl, Torvald, to ITT Ind., Inc. Mechanical seal device. 3,861,690, Cl. 277-26.000.

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Eratova, Valeria Lvovna: *See—*
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Erhart, Dieter, to Mannesmann-Leichtbau GmbH. Coupling structure for cooperation with a member anchored in a stone part. 3,861,106, Cl. 52-587.000.

Erhart, Francis J.; and Schroeder, Harold H., to Xerox Corporation. System for vapor deposition of thin films. 3,861,353, Cl. 118-49.100.

Eriksson, Karl-Ingvar: *See—*
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Erwien, Helmut, to Gewerkschaft Eisenhutte Westfalia. Longwall mining apparatus for accommodating flexible supply lines. 3,861,751, Cl. 299-43.000.

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ESB Incorporated: *See—*
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Esco Manufacturing Company: *See—*
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Eskeli, Michael. Sealed single rotor turbine. 3,861,147, Cl. 60-643.000.

ESPE, Fabrik Pharmazeutischer Praparate GmbH: *See—*
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Eurlings, Jacobus J. M. G.; Geus, John W.; and Ottenheym, Johannes H., to Slamicarbon B.V. Catalyst preparation. 3,862,055, Cl. 252-476.000.

Evans, Thomas K.; and Broeker, Russell E. Bicycle rack support. 3,861,714, Cl. 280-202.000.

Evenstad, Sydney T., to Nissan Motor Company Limited. Sinter pallet apparatus. 3,861,659, Cl. 266-21.000.

Evers, Harry G., to Antel Corporation. Calling station identifier-sender. 3,862,374, Cl. 179-18.0FH.

Excoffon, Jean, to Automobiles M. Berliet. Cylinder head for a diesel engine. 3,861,375, Cl. 123-188.00M.

Exxon Nuclear Company, Inc.: *See—*
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Fansler, Harry M. Pool challenger indicator in combination with pool table border and plurality of tokens. 3,861,678, Cl. 273-3.00R.

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Farmer, Robert Clyde; and Hume, Harold Frederick, to du Pont de Nemours, E. I., and Company. Process for knitting two-bar fabrics from three warp thread sets. 3,861,175, Cl. 66-86.00A.

Fatosme, Albert; and Coste, Henri. Building member. 3,861,100, Cl. 52-227.000.

Faudree, Stan A. Two piece wall frame for an opening therein. 3,861,099, Cl. 52-211.000.

Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; and Pourrias, Bernard M., to Delalande S.A. Derivatives of 5-cinnamoyl benzofuran. 3,862,176, Cl. 260-240.00J.

Fauran, Claude P.; Eberle, Jeannine A.; Le Cloarec, Albert-Yves; Dorme, Nicole A. M.; and Raynaud, Guy M., to Delalande S.A. Novel 1-(2'-benzoyl eth-1'-yl)-2-(4''-cinnamyl piperazin-1''-yl methyl) benzimidazoles, their process of preparation and their therapeutic application. 3,862,177, Cl. 260-240.00K.

Faville, Warwick Scott: *See—*
Senior, Alan Gordon; and Faville, Warwick Scott, 3,861,593.

Favis, Dimitrios V., to Exxon Research and Engineering Company. Preparation of high viscosity index lubricating oil. 3,862,024, Cl. 208-46.000.

Fawn Engineering: *See—*
Wittern, Francis A.; and Wirstlin, Arthur N., 3,861,561.

Fedders Corporation: *See—*
Woehler, Harold L., 3,861,413.

Felsenthal, Harry D., Jr., to United States of America, Navy. Microwave gyro. 3,861,220, Cl. 73-505.000.

Ferguson, Hugo S. Air cushion vehicle. 3,861,491, Cl. 180-120.000.

Ferguson, Scott M. Air travel alcoholic beverage dispenser. 3,861,431, Cl. 141-364.000.

Fex, Hans Jacob: *See—*
Hogberg, Knut Bertil; Fex, Hans Jacob; Fredholm, Bo Goran; Perklev, Torsten Rune; and Veige, Sten Gunner, 3,862,270.

F'Geppert, Erwin, to United States of America, Army. Gear teeth reinforcement. 3,861,231, Cl. 74-410.000.

Fiedrich, Volkmar, to Siemens Aktiengesellschaft. Device for carrying out two-dimensional interpolation in conjunction with a fixed word store. 3,862,404, Cl. 235-152.000.

Fier, Raymond L., to TWM Manufacturing Company, Inc. High strength auxiliary axle suspension system for low frame wheeled vehicles. 3,861,708, Cl. 280-124.00F.

Fillingim, Leland T., to Northern Propane Gas Company. Dynamometer testing rig. 3,861,204, Cl. 73-117.000.

Findeisen, Kurt; Wagner, Kuno; and Holtschmidt, Hans, to Bayer Aktiengesellschaft. 1,2,4-Oxadiazoles. 3,862,168, Cl. 260-307.00G.

Finn Industries Div., Patlatch Forests, Inc., The: *See*—
Sellors, Thomas J., 3,861,581.

Finnemore, Harlan E.: *See*—
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Finnila, Ronald M.: *See*—
Dill, Hans G.; Ernstoff, Michael N.; Finnila, Ronald M.; Hoffman, William C.; Leupp, Alex M.; and Winner, Richard N., 3,862,360.

Firestone, Raymond A.: *See*—
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Firestone Tire & Rubber Company, The: *See*—
Halasa, Adel Farhan; and Schulz, Donald Norman, 3,862,100.
Leonard, William A.; Preston, David M.; and Smith, Thomas W., 3,861,742.

First Jersey National Bank, The: *See*—
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Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Control of unwanted plants. 3,861,900, Cl. 71-88.000.

Fischer, Adolf: *See*—
Zeeh, Bernd; Wulz, Klaus; and Fischer, Adolf, 3,862,208.

Fischer, Dennis D.: *See*—
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Fischer & Porter Co.: *See*—
Grier, David G.; Albright, Gerard P.; and Rees, David G., 3,861,453.

Fischer, William K., to Uniroyal, Inc. Thermoplastic blend of partially cured monoolefin copolymer rubber and polyolefin plastic. 3,862,106, Cl. 260-80.780.

Fisher, John M., to B. F. Goodrich Company, The. Inflatable life raft escape slide. 3,860,984, Cl. 9-11.00A.

Fisher, Sandor Jehuda. Traction mat. 3,861,592, Cl. 238-14.000.

Fisher, Sidney L. Coupler for line members. 3,861,814, Cl. 403-300.000.

Fison House: *See*—
Fitzmaurice, Colin; and Lee, Thomas Brian, 3,862,175.

Fitch, Clifford E., Jr.: *See*—
Albright, Charles Jere; Fitch, Clifford E., Sr.; and Fitch, Clifford E., Jr., 3,861,286.

Fitch, Clifford E., Sr.: *See*—
Albright, Charles Jere; Fitch, Clifford E., Sr.; and Fitch, Clifford E., Jr., 3,861,286.

Fittertenstrasse 17. Quick-change chuck assembly. 3,861,694, Cl. 279-79.000.

Fitzgerald, Maurice J., to Polaroid Corporation. Synthetic silver halide emulsion binder. 3,861,918, Cl. 96-114.000.

Fitzmaurice, Colin; and Lee, Thomas Brian, to Fison House. Bischromone compounds. 3,862,175, Cl. 260-240.00D.

Fjermestad, Arnold R.: *See*—
Johnson, Kendall R.; and Fjermestad, Arnold R., 3,861,355.

Fleischer, Hans; and Bibbens, William H., to Hoesche Werke Aktiengesellschaft. Rotary connection for roll bodies with transmission. 3,861,243, Cl. 74-805.000.

Fleischer, Henry. Nozzle arrangement. 3,861,598, Cl. 239-543.000.

Fleischmann, Lewis W. Proportional control closed circuit gas admission system. 3,861,412, Cl. 137-83.000.

Fletcher Engineering, Inc.: *See*—
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Fletcher, Ian John: *See*—
Kabas, Guglielmo; Schlaepfer, Hans; and Fletcher, Ian John, 3,862,179.

Flintkote Company, The: *See*—
Russell, Thomas E., 3,862,068.
Slater, Thomas C., deceased; and Hamilton, Floyd C., Jr., 3,861,928.

Flowers, Ralph G.; and Sherer, Thomas L., to General Electric Company. Polyamide-imide compositions. 3,862,092, Cl. 260-78.0TF.

Flynn, Gregory, Jr.; and Louzecky, Paul J., to General Motors Corporation. Liquid cooled rotor housing. 3,861,837, Cl. 418-83.000.

FMC Corporation: *See*—
Cruz, Mamerto M., Jr.; Erdi, Nicholas Z.; and Battista, Orlando A., 3,862,069.
Taylor, John S., 3,861,931.

Follert, Hans Gunter; Beyer, Albert; Robatzek, Alfons; and Unger, Eberhard, to Gewerkschaft Eisenhutte Westfalia. Tunnel driving apparatus. 3,861,750, Cl. 299-33.000.

Follert, Hans Gunter; and Beyer, Albert, to Gewerkschaft Eisenhutte Westfalia. Rack drill cutting wheel bearing. 3,861,765, Cl. 308-8.200.

Follett, John O., Jr. Folding ladder. 3,861,499, Cl. 182-163.000.

Fondrk, Terry L.: *See*—
Russell, Sid; and Fondrk, Terry L., 3,861,137.

Ford, Francis L. Fence structure. 3,861,084, Cl. 49-427.000.

Ford, Ronald K.: *See*—
Sturgeon, James L.; and Ford, Ronald K., 3,861,064.

Forgo, Gabor; Meyer, Erwin; and Moser, Karl, to Zellweger AG. Method for electrostatic printing, products produced thereby, and use of these products. 3,861,940, Cl. 117-17.500.

Forney, Steven W. Process for controlling pollution and contamination in paint or lacquer spray booths. 3,861,887, Cl. 55-19.000.

Forrest, Edward J. Portable and collapsible seat and leg board for leg amputees. 3,861,745, Cl. 297-423.000.

Forster, Franz, to Linde Aktiengesellschaft. Piston for hydrostatic machines. 3,861,278, Cl. 92-57.000.

Fortuna-Werke Maschinenfabrik AG: *See*—
Mueller, Josef, 3,861,275.

Foseco Trading A.G.: *See*—
Dzurilla, Robert Richard; and Jago, Edward John, 3,861,979.

Foster Wheeler Corporation: *See*—
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Foundation Patent & Investment Company, N.V.: *See*—
Hillen, Henri Fredericus Josephus Marie, 3,861,157.

Fountain, Mary; and Radei, Ruth. Case for cigarettes and cigarette substitute. 3,861,523, Cl. 206-236.000.

Fox, Cyril: *See*—
Mason, Thomas Ernest; Fox, Cyril; and Campbell, Robert Edward, 3,861,811.

Fox, Morton: *See*—
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Fr. Hesser Maschinenfabrik AG: *See*—
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Fradin, Jean: *See*—
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Frankenfeld, Klaus: *See*—
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Frankfort, Hans R. E.; and Lyons, Peter F., to du Pont de Nemours, E. I., and Company. Production of highly crimped polyester yarn. 3,861,133, Cl. 57-140.00R.

Franklin, Arch V. Ladle flow control safety device for continuous casting machine. 3,861,571, Cl. 222-533.000.

Frazier, Alva W., to Tennessee Valley Authority. Stabilization of polyphosphate fertilizer solutions. 3,861,897, Cl. 71-34.000.

Frederikshavn Vaerfta & Tordoka A/S: *See*—
Sorensen, Per Holst, 3,861,341.

Fredholm, Bo Goran: *See*—
Hogberg, Knut Bertil; Fex, Hans Jacob; Fredholm, Bo Goran; Perklev, Torsten Rune; and Veige, Sten Gunner, 3,862,270.

Fredriksen, Wilhelm. Cross-country type ski binding system. 3,861,700, Cl. 280-11.35B.

Freedy, Allan L.; Muller, Thomas P.; and Popdan, Gary L., to Caterpillar Tractor Co. Guard and scraper for an idler wheel. 3,861,762, Cl. 305-12.000.

Fretwell, Jack W., Jr. Device for launching and dousing light sails such as spinnakers. 3,861,343, Cl. 114-104.000.

Frey, Max; and Eberle, Max A., to Hydron Corporation. Machine for testing toe and heel clamps on ski bindings. 3,861,205, Cl. 73-133.00A.

Fried Krupp Gesellschaft mit beschrankter Haftung: *See*—
Lindermann, Herbert, 3,861,189.

Friedrich Kocks, Firma: *See*—
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Friend, Gordon Charles; Geach, Charles John; and Groszek, Aleksander Jerzy. Adsorption of n-paraffins with graphite-alumina pellets. 3,862,026, Cl. 208-310.000.

Froerup, Carl; and Mitchell, Russell L., to Adams Rite Manufacturing Company. Electrically released strike. 3,861,727, Cl. 292-341.160.

Fruechte, Vernon D. Power transfer system in a multi-engine propeller driven aircraft. 3,861,623, Cl. 244-53.00R.

Frumkin, Mikhail Evseevich: *See*—
Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Frumkin, Mikhail Evseevich; and Mirchevsky, Petr Nikolaevich, 3,861,537.

Fry, David Philip, to BP Chemicals International Limited. Moulding compositions containing unsaturated and saturated polyesters, cellulose ester and monomeric material. 3,862,064, Cl. 260-16.000.

Fryer, John L.; Garrison, Robert L.; Nelson, Jim S.; and Rohovec, John S., to United States of America, Interior. Vibrio vaccine and immunization. 3,862,313, Cl. 424-92.000.

Fuchs, Werner: *See*—
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Fuji Photo Film Co., Ltd.: *See*—
Hara, Hiroshi; Yokota, Yukio; Amano, Hiroyuki; and Nishimura, Tokio, 3,861,923.
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Fujia Originals Kogyo Co., Ltd.: *See*—
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Fujii, Hirokazu. Baseball bat. 3,861,682, Cl. 273-72.00A.

Fujimori, Toshimitsu: *See*—
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Fujitsu Ten Ltd.: *See*—
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Fujiwara, Takao: *See—*
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Fukui, Takichi; and Sonobe, Noriyoshi, to Hitachi, Ltd. Hydraulic thrusting device of rolling mills. 3,861,183, Cl. 72-21.000.
Fukushima, Toshihiko; Kurioka, Shunichiro; and Morimoto, Masahiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Acrylic synthetic fibers having increased flame retardance and method of producing same. 3,862,070, Cl. 266-28.50A.
Fukuzawa, Kenichi: *See—*
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Fulton Industries, Inc.: *See—*
Grove, John L., 3,861,498.
Funderburk, Kit, to Eastman Kodak Company. Receiver sheets for electrostatic recording. 3,861,954, Cl. 117-218.000.
Furia, Thomas E.; and Steinberg, David H., to Ciba-Geigy Corporation. Mercapto quinoline n-oxides and their use in combatting dandruff. 3,862,151, Cl. 260-270.00R.
Furth, Werner F.; and Benson, Paul R., to Cameron Iron Works, Inc. Controllably submersible buoy. 3,860,983, Cl. 9-8.00R.
Furuichi, Akio, to Rikagaku Kenkyusho. Method of making a moisture-sensitive element. 3,861,031, Cl. 29-610.000.
Furukawa, Tadayasu: *See—*
Yamamoto, Atsushi; Teranishi, Hiroshi; Furukawa, Tadayasu; and Matsuki, Takashi, 3,862,290.
Furutaka, Takeo: *See—*
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Futaki, Shigeki: *See—*
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Gale, Walter W., to Exxon Production Research Company. Oil recovery process utilizing aqueous solution of a mixture of alkyl xylene sulfonates. 3,861,466, Cl. 166-273.000.
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Gallucci, Francis; and Slamar, Frank, to United States Steel Corporation. Mechanism for controlling forces on a strand as it solidifies. 3,861,456, Cl. 164-154.000.
Galya, William; and Shuffield, Jack E. Fabric edge-rolling and label-attaching machine. 3,861,338, Cl. 112-104.000.
Gam Rad, Inc.: *See—*
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Gamell, Joseph A., to Joseph Gamella Ind., Inc. Ignition system for engine. 3,861,371, Cl. 123-148.00E.
Gange, Robert Allen, to RCA Corporation. Permanent holographic recording medium. 3,861,914, Cl. 96-1.500.
Garber, Duane L.: *See—*
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Garfinkel, Jack; and Rosenberg, Ronald K. Stapling apparatus. 3,861,017, Cl. 29-203.0DT.
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Gaspar, Noel J.: *See—*
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Gastaud, Jean Marie, to Societe Anonyme Francaise Theramex. Steroid derivatives and the preparation thereof. 3,862,195, Cl. 260-397.400.
Gastin, David R.; and Baaske, Ronald A. Game apparatus. 3,861,684, Cl. 273-134.00G.
Gayner, Herbert; and Smith, David A., to Aluminum Company of America. Laminated container wall. 3,861,976, Cl. 156-257.000.
Geach, Charles John: *See—*
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Wise, Richard M., 3,861,980.
Genod, Robert; and Merand, Michel, to Rhone-Poulenc S.A. Process for the purification of phenol. 3,862,244, Cl. 260-621.00A.
Georg, Werner, to Gewerkschaft Eisenhutte Westfalia. Mineral mining installations. 3,861,749, Cl. 299-32.000.
George, John Barrett, to RCA Corporation. Video amplifier circuit for use with synchronous detectors. 3,862,361, Cl. 178-7.30R.
George, Richard E., to Interstate Electronics Corporation. Triangle wave generator having direct tunnel diode switch control. 3,862,436, Cl. 307-228.000.
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Gerry, Martin E. Distortionless magnetic components such as record and reproduce heads. 3,862,115, Cl. 360-125.000.
Gerschwiller, Fred Albert. Wire fence connector. 3,861,247, Cl. 81-3.00R.
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Gillette, Roy A.; and Klee, Maurice, to J. I. Case Company. Hydrostatic drive arrangement for vehicles. 3,861,481, Cl. 180-6.480.

Gilliland, Robert D.; and Wistreich, Hugo E., to B. Heller & Company. Liquid smoke regenerator. 3,861,292, Cl. 99-476.000.

Gladstone, Matthew T.: *See—*
Wisdom, Norvell E., Jr.; and Gladstone, Matthew T., 3,861,892.

Glaister, Frank Joseph; Squitieri, Vincent; and Lynn, William J., to Chomerics, Inc. Keyboard switch assembly with multilayer, coextensive contactor means. 3,862,381, Cl. 200-5.00A.

Glaister, Frank Joseph; Squitieri, Vincent; and Lynn, William J., to Chomerics, Inc. Keyboards switch assembly with multilayer pattern contact means. 3,862,382, Cl. 200-5.00A.

Glaister, Frank Joseph: *See—*
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Glassmeyer, John J., to Pullman Incorporated. Two-speed trailer landing gear safety arrangement. 3,861,648, Cl. 254-86.00R.

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Glover, George M.; Nimoy, Melvin; Petterson, DeWitt R.; and Volk, Albert J., to Johnson & Johnson. Intravenous catheter. 3,861,972, Cl. 156-86.000.

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Godwin, Hartsel L., to Volkswagen Products Corporation. Adjustable grille. 3,861,281, Cl. 98-2.000.

Goebel, Hermann, to Bayer Aktiengesellschaft. Tetrakisazo compounds. 3,862,118, Cl. 260-166.000.

Goikhrakh, Aron Izrailevich; Baikov, Jury Ivanovich; and Gorshtein, Ioshua Gilovich. Vertical continuous kiln for producing high-purity metal oxides and other compounds. 3,861,864, Cl. 432-95.000.

Goiot, Jean R., to Moteurs Goiot. Hatches for use in boats. 3,861,083, Cl. 49-193.000.

Goldberg, Bruce S., to Amerace Esna Corporation. Microporous submicron filter media. 3,862,030, Cl. 210-24.000.

Goldsberry, Fred L., to Lone Star Gas Company. Heat pump system. 3,861,166, Cl. 62-115.000.

Goodfriend, Roger: *See—*
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Goodman, Geoffry. Device for decreasing deposits in liquid filters. 3,862,035, Cl. 210-79.000.

Goodnight, Fred H.; Walters, George E.; and Ward, John P., to LTV Aerospace Corporation. Transportation system and vehicles for the system. 3,861,321, Cl. 104-148.0MS.

Goodyear Tire & Rubber Company, The: *See—*
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Goralski, Christian T.; and Klingler, Thomas C., to Dow Chemical Company, The. N-substituted-1-(arylsulfinyl and arylsulfonyl)methanesulfonamides. 3,862,184, Cl. 260-247.10R.

Gordon, Edward L. Money clip. 3,861,002, Cl. 24-81.000.

Gordon, John S., to Hayssen Manufacturing Co. Wrapping apparatus. 3,861,120, Cl. 53-230.000.

Gorshtein, Ioshua Gilovich: *See—*
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Gotz Metallbau GmbH: *See—*
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Gouirand, Rene, to Mercadante, Joseph. Air suspension with saddle members. 3,861,706, Cl. 280-104.50A.

Gould, Lillian. Luggage carrier. 3,861,703, Cl. 280-47.13R.

Goverde, Bastiaan Cornelis: *See—*
Price, Richard Thompson; Bauer, Stuart Michael; Brownlee, John; and Goverde, Bastiaan Cornelis, 3,862,302.

Grachev, Leonid Pavlovich: *See—*
Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Frumkin, Mikhail Evseevich; and Mirchevsky, Petr Nikolaevich, 3,861,537.

Grail, Thomas J.: *See—*
Steinkamp, Robert A.; and Grail, Thomas J., 3,862,265.

Grainger, Norman, to R. P. Scherer Limited. Marking method. 3,861,943, Cl. 117-37.00R.

Grandy, Andrew J. Ammunition and weapon systems. 3,861,308, Cl. 102-38.000.

Grant, Peter M.: *See—*
McConnell, Richard L.; Taylor, Robert B.; and Grant, Peter M., 3,862,266.

Grantham, Frederick W. Drying system. 3,861,865, Cl. 432-105.000.

Graves, Ralph L.: *See—*
Triantafellow, Harry; and Graves, Ralph L., 3,861,773.

Graves, Robert W.: *See—*
Schier, Jacques; and Graves, Robert W., 3,861,433.

Great Games, Inc.: *See—*
Ratliff, Raymond W., 3,861,687.

Greco, Carl C.; and Stamm, Walter, to Stauffer Chemical Company. Process of manufacturing nitrilotriacetonitrile. 3,862,203, Cl. 260-465.50A.

Greco, Francesco; Longi, Paolo; D'Angelo, Romano; Chiolle, Antonio; and Credali, Lino, to Montecatini Edison S.p.A. Copolymers of diallyldialkylammoniumm compounds, anion permoselective membranes based thereon and process for preparing said membranes. 3,862,059, Cl. 260-2.10C.

Greco, Nicholas P., to Koppers Company, Inc. Resorcinol preparation. 3,862,245, Cl. 260-621.00M.

Greco, Nicholas P., to Koppers Company, Inc. Hydrolysis of metaphenylenediamine. 3,862,246, Cl. 260-621.00M.

Greco, Nicholas P., to Koppers Company, Inc. Hydrolysis of paraaminophenol. 3,862,247, Cl. 260-621.00M.

Green, Edward H. Variable spray rate aerosol valve construction. 3,861,570, Cl. 222-402.170.

Greenfeld, Herman. Body circulation and vapor heat treatment device. 3,861,364, Cl. 128-68.100.

Greenwald, Richard B., to Polaroid Corporation. Naphthalide indicator dyes. 3,862,128, Cl. 260-326.12R.

Grego, Thomas E., to Ingersoll-Rand Company. Sound absorbing device. 3,861,494, Cl. 181-33.00A.

Greig, James W. Combination snowshoe and ski. 3,861,698, Cl. 280-11.13Y.

Grieco, Rocco F. Fixture for supporting a tool subject to grinding including accurately positionable tilting angle plate. 3,861,088, Cl. 51-216.00A.

Grier, David G.; Albright, Gerard P.; and Rees, David G., to Fischer & Porter Co. Receiver-transmitter unit for process control system. 3,861,453, Cl. 137-85.000.

Grimes, Richard V.: *See—*
Biermann, David; Grimes, Richard V.; Howe, Gilbert D.; and Critchlow, E. Forest, 3,861,828.

Griverus, Tor Lennart Bernt. Flow meter provided with an orbiting sensing element. 3,861,210, Cl. 73-194.00C.

Grolig, Johann: *See—*
Scharff, Gerhard; Martin, Manfred; Swodenk, Wolfgang; Dornfeldt, Wolfram; and Grolig, Johann, 3,862,236.

Groom, Walter Joseph: *See—*
Cooksey, William Harold; Cleaver, Brian William; and Groom, Walter Joseph, 3,861,171.

Gross, Frank J., to American Cyanamid Company. Protecting material's with organo-bismuth compounds. 3,862,326, Cl. 424-296.000.

Grosser, Frederick: *See—*
Barabas, Eugene S.; and Grosser, Frederick, 3,862,091.

Grosshans, Winfried A.: *See—*
Eisenlohr, Karl Heinz; Grosshans, Winfried A.; and Nakajima, Toshiyuki, 3,862,254.

Grossman, Abraham. Bathtub closure means having vertifically slidable panels and method of assembly. 3,860,975, Cl. 4-149.000.

Groszek, Aleksander Jerzy: *See—*
Friend, Gordon Charles; Geach, Charles John; and Groszek, Aleksander Jerzy, 3,862,026.

Grove, John L., to Fulton Industries, Inc. Counterbalancing chassis for aerial platform apparatus. 3,861,498, Cl. 182-141.000.

Gruber, Wolfgang: *See—*
Wahlefeld, August Wilhelm; Mollering, Hans; Gruber, Wolfgang; Bernt, Erich; and Roeschlau, Peter, 3,862,009.

GTE Sylvania Incorporated: *See—*
Scheithauer, William, Jr., 3,861,966.

Guardian Industries, Inc.: *See—*
Hall, Robert A., 3,862,386.

Gudebrod Bros. Silk Co., Inc.: *See—*
Hooven, Frederick, 3,861,015.

Guestaux, Claude, to Eastman Kodak Company. Process for making flat photographic film product. 3,861,942, Cl. 117-34.000.

Guisinger, Barrett Earl, to International Video Corporation. Helical scan wide band tape recorder apparatus and method. 3,862,355, Cl. 178-6.60P.

Gulf Research & Development Company: *See—*
Doyle, William C., Jr., 3,862,183.

Gunkel, H. Rudolf: *See—*
Gelhard, Egon; and Gunkel, H. Rudolf, 3,861,319.

Gunze Kobunshi Kogyo Co. Ltd.: *See—*
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Gustafsson, Axel Gerhard Varne, to Aktiebolaget Bofors. Device for damping rocking movements occurring in a chassis. 3,861,696, Cl. 280-6.00H.

Guthrie, James L., to W. R. Grace & Co. Composite foam scouring pad. 3,861,993, Cl. 161-159.000.

Guzaski, Joseph A., to International Telephone and Telegraph Corporation. Rolling apparatus. 3,861,291, Cl. 99-450.200.

Gylen, Lilly, administratrix: *See—*
Dahle, Orvar; Von Knorring, Folke; and Gylen, Nils, deceased, 3,861,203.

Gylen, Nils, deceased: *See—*
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H-B Industries Inc.: *See—*
Beck, Edwin J., 3,862,405.

H. H. Robertson Company: *See—*
Payne, Harold James William, 3,861,493.

H. Vissers N.V.: *See—*
Oosterling, Pieter Adriaan; and Hooftman, Johannes Philippus, 3,861,600.

Haakenson, Edward C., deceased (Haakenson, Rose H., executrix), to Haakenson, Rose H. Pollution control. 3,862,043, Cl. 250-527.000.

Haakenson, Rose H.: *See—*
Haakenson, Edward C., deceased, 3,862,043.

Haakenson, Rose H., executrix: *See—*
Haakenson, Edward C., deceased, 3,862,043.

Haans, Petrus Franciscus Antonius: *See—*
De Vries, Gerhard Heinrich Friedrich; and Haans, Petrus Franciscus Antonius, 3,862,447.

Haas, Ronald J.: *See—*
Afrance, Frank C.; Rosa, Albert G.; and Haas, Ronald J., 3,861,963.

Haberle, Fritz; Riechers, Daniel; Munsinger, Walter; and Kleiner, Horst, to Daimler-Benz Aktiengesellschaft. Bumper for motor vehicles. 3,861,728, Cl. 293-62.000.

Hagedorn, Alton R.: *See—*
Bayless, Jack H.; and Hagedorn, Alton R., 3,861,469.

Hagemeister, Per Juel. Bag dispensing rack. 3,861,125, Cl. 53-390.000.

Hagihara, Takaeki; Sato, Haruo; and Sasaki, Shozo, to Asahi Kasei Kogyo Kabushiki Kaisha. Polymerizable compositions and laminated articles bonded. 3,862,021, Cl. 204-159.150.

Hahn, Ernest A.: *See—*
Hartzell, Rowland S.; and Hahn, Ernest A., 3,861,945.

Hajos, Gyorgy: *See—*
Low, Miklos; Kisfaludy, Lajos; Patthy, Agnes; Szirmai, Maria; Nyeki, Olga; Szporny, Laszlo; and Hajos, Gyorgy, 3,862,111.

Halasa, Adel Farhan; and Schulz, Donald Norman, to Firestone Tire & Rubber Company, The. Alkali metal aliphatic and aromatic hydrocarbon acetals and ketals and their use as polymerization initiators, etc.. 3,862,100, Cl. 260-94.20R.

Hale, Arthur N., to Union Special Machine Company. Super speed clutch motor. 3,862,444, Cl. 310-74.000.

Halkias, John E.: *See—*
Weltman, Henry J.; Carroll, Mark T.; Halkias, John E.; Kaarlela, William T.; and Reynolds, Jack D., 3,862,047.

Hall, Gerald D.; Hein, Allyn J.; Johnson, Howard L.; and Junck, John A., to Caterpillar Tractor Co. Multiple hydraulic control circuits with pressure compensated flow control and a single variable delivery pump. 3,861,145, Cl. 60-427.000.

Hall, Joseph F., Jr., to Perkin-Elmer Corporation, The. Confocal cavity optical gas sensor. 3,861,809, Cl. 356-188.000.

Hall, Robert A., to Guardian Industries, Inc. Snap action type inertia switch with vibration amplication and actuator means. 3,862,386, Cl. 200-61.45R.

Halliburton Co.: *See—*
Kampfer, John G., 3,862,417.

Halsey, Edmund R. Instrument for measuring curved surfaces. 3,861,808, Cl. 356-169.000.

Hamada Printing Press Mfg. Co., Ltd.: *See—*
Kubo, Hagemu, 3,861,612.

Hamada, Tomohiro; Ueda, Atsushi; and Tatsumi, Takumi, to Mitsubishi Denki Kabushiki Kaisha. Collision speed sensor. 3,861,488, Cl. 180-91.000.

Hamano, Hiroaki: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Miyano, Koichi; Hamano, Hiroaki; and Tanaka, Wataru, 3,862,159.

Hamelin, Gilbert, to Robert Bosch G.m.b.H. Monitoring and protecting circuit for an electronic braking system. 3,861,760, Cl. 303-21.0AF.

Hamill, Robert L.; and Nagarajan, Ramakrishnan, to Eli Lilly and Company. Process for deacetoxycephalosporin c.. 3,862,008, Cl. 195-80.00R.

Hamilton, Floyd C., Jr.: *See—*
Slater, Thomas C., deceased; and Hamilton, Floyd C., Jr., 3,861,928.

Hamling, Bernard H., to Union Carbide Corporation. Process for the preparation of zircon coated zirconia fibers. 3,861,947, Cl. 117-118.000.

Hammann, Ingeborg: *See—*
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Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 3,862,269.
Schrader, Gerhard; and Hammann, Ingeborg, 3,862,268.
Schrader, Gerhard; and Hammann, Ingeborg, 3,862,271.
Schrader, Gerhard; Hammann, Ingeborg; and Homeyer, Bernhard, 3,862,272.

Hammer, Thorvald F. Automatic galvanizing machines. 3,861,352, Cl. 118-425.000.

Hampel, Hans: *See—*
Henschler, Dietrich; Wagner, Josef; and Hampel, Hans, 3,862,213.

Hancock, Daniel M., to General Motors Corporation. Transmission with speed responsive shifting in reverse gears. 3,861,241, Cl. 74-733.000.

Hand, James D. Transition pipe fitting. 3,861,719, Cl. 285-47.000.

Haney, Thomas A.: *See—*
Bruno, Gerald A.; Haney, Thomas A.; and Rajamani, Puthucode N., 3,862,299.

Hann, Ernst Wilheim: *See—*
Bille, Heinz; Hann, Ernst Wilheim; Luetzel, Gerhard; Schmidt, Guenther; and Voelker, Dieter, 3,862,073.

Hanna, Russell J.: *See—*
Dawson, Thomas L.; and Hanna, Russell J., 3,862,076.

Hanneken, George; and Wirth, Christian, to Hooker Chemicals & Plastics Corporation. Method of producing suede-like synthetic leathers. 3,861,937, Cl. 117-10.000.

Hanning, Robert. Machine for the injection molding of a mixture of plasticized synthetic material. 3,861,841, Cl. 425-146.000.

Hannon, Charles N. Threaded bottle cap with vertical external scores. 3,861,551, Cl. 215-252.000.

Hansen Manufacturing Co., The: *See—*
Norton, James F., 3,861,645.

Hansen, Paul J. Rotary air compressor including a sinuous tubular member presenting a series of compression chambers and pistons movable through said chambers. 3,861,836, Cl. 418-81.000.

Hara, Hiroshi; Yokota, Yukio; Amano, Hiroyuki; and Nishimura, Tokio, to Fuji Photo Film Co., Ltd. Silver halide color photographic materials containing a 3-ureido-5-pyrazolone coupler and an aldehyde compound. 3,861,923, Cl. 96-100.000.

Hara, Tadashi: *See—*
Okuyama, Takashi; Yoshida, Keiichi; Sakurai, Katukiyo; Ogura, Takashi; Horie, Katuyuki; Tawada, Akira; and Hara, Tadashi, 3,862,003.

Harada, Masahiro; Hirokawa, Yuuji; Nozaki, Syohei; Miyahara, Kenji; and Takeda, Matsuyuki, to Matsushita Electric Industrial Co., Ltd. Dry cell. 3,861,962, Cl. 136-133.000.

Harada, Naohiko: *See—*
Itoh, Kunio; Harada, Naohiko; and Yoshida, Takeo, 3,862,081.

Harasta, Clarence J.: *See—*
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Harbert, Bobby C., to United States of America, United Air Force. Gauge installation tool. 3,861,987, Cl. 156-556.000.

Harbison, Richard L.: *See—*
Van Riper, Richard W., Jr.; and Harbison, Richard L., 3,860,997.

Harding, Joseph J. Magnetically attached cover for a golf club. 3,861,434, Cl. 150-52.00G.

Harfenist, Morton, to Burroughs Wellcome Co. Bis-[beta-(4-N,N-diacetylaminophenoxy)ethyl]ether. 3,862,226, Cl. 260-562.00P.

Harnden, John D., Jr.; and Kornrumpf, William P., to General Electric Company. Opto-electronic object detector using semiconductor light source. 3,862,415, Cl. 250-221.000.

Harnsberger, Bobby G., to Texaco Inc. Permeable cementing method. 3,861,467, Cl. 166-276.000.

Harper, Donald W.: *See—*
Mertens, Robert C.; and Harper, Donald W., 3,861,310.

Harper, Lee R., to du Pont de Nemours, E. I., and Company. Thermosetting acrylic powder of an acrylic polymer having low glass transition temperature, cellulose acetate butyrate and a cross-linking agent. 3,862,062, Cl. 260-15.000.

Harrell, Melvin R., to Phillips Petroleum Company. Film positioning apparatus. 3,861,983, Cl. 156-361.000.

Harris-Intertype Corporation: *See—*
Hitch, Thomas R., 3,861,259.
Norton, Robert K., 3,861,672.

Harris, Raleigh J.; and Peck, Allan E., to Misto & Gen Equipment Co. Ultrasonic nebulizer. 3,861,386, Cl. 128-194.000.

Harrison, James S.: *See—*
Wertlake, Paul T.; and Harrison, James S., 3,862,300.

Hartford Fibres Ltd.: *See—*
Laird, William F.; Walsh, David I.; and Corneau, George E., 3,861,257.

Hartman, Jack E., to U.S. Industries, Inc. Slatted floor assembly. 3,861,108, Cl. 52-667.000.

Hartman, James William: *See—*
Mohr, John Gilbert; Hartman, James William; and Arno, David Michael, 3,861,608.

Hartman, Paul F., to Allied Chemical Corporation. Semiconductor polymer compositions comprising a grafted block copolymer of synthetic rubber and polyolefin and carbon black. 3,862,056, Cl. 252-511.000.

Hartzell Propeller, Inc.: *See—*
Biermann, David; Grimes, Richard V.; Howe, Gilbert D.; and Critchlow, E. Forest, 3,861,828.

Hartzell, Rowland S.; and Hahn, Ernest A., to PPG Industries, Inc. Photopolymerization of pigmented actinic light-sensitive compositions. 3,861,945, Cl. 117-93.310.

Harvey, James R.: *See—*
Sellers, Ralph F.; and Harvey, James R., 3,862,260.

Hasegawa, Hiroyuki; Baba, Keizo; and Kamada, Takemi, to Nippon Electric Company Limited. Separable optical fiber connector and the method of manufacturing the same. 3,861,781, Cl. 350-96.00C.

Haselbarth, Heinz: *See—*
Coriasco, Peter; and Haselbarth, Heinz, 3,861,512.

Hatanaka, Masayuki; Mahekawa, Ryooichi; and Maruyama, Hideo, to Toshiba Silicone Kabushiki Kaisha. Flame retardant silicone rubber compositions. 3,862,082, Cl. 260-37.0SB.

Hatanaka, Yoshihiro; Asami, Kazuto; and Nakai, Shiro, to Glory Kogyo Kabushiki Kaisha. Rotary disk speed control in automatic coin processing apparatus. 3,861,408, Cl. 133-8.00R.

Haubner, Georg: *See—*
Allwang, Heribert; Haubner, Georg; and Hofer, Walter, 3,861,373.

Haug, Theobald, to Ciba-Geigy Corporation. New diamines. 3,862,227, Cl. 260-563.00R.

Hauslein, Reinhard, to Melitta-Werke Bentz & Sohn. Filtering device and process of manufacturing the same. 3,861,975, Cl. 156-217.000.

Havinga, Reginoldus; and Swaters, Pieter Dirk, to Koninklijke Industrieele Maatschappij. Ultraviolet light and heat stabilizers. 3,862,211, Cl. 260-476.00R.

Hawkins, Claude Don: *See—*
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Hayakawa, Yoshikazu: *See—*
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Hayashi, Chisayo: *See—*
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Hayashi, Yasuo: *See—*
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Hayatsu, Kazuo: *See—*
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Heckler & Koch GmbH: *See—*
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Heckrotte, John R., Sr.; and Marcacci, James P. Electric meter lock ring. 3,861,180, Cl. 70-164.000.
Hedges, Lee M., to Johns-Manville Corporation. Collapsible fluid conduit. 3,861,423, Cl. 138-119.000.
Heidt, Gunter. A street-cleaning machine. 3,860,991, Cl. 15-340.000.
Hein, Allyn J.: *See—*
Hall, Gerald D.; Hein, Allyn J.; Johnson, Howard L.; and Junck, John A., 3,861,145.
Heine, Helmut A., to Optotechnik Heine KG; and Propper Manufacturing Company, Inc. Wide-angle ophthalmoscope. 3,861,789, Cl. 351-12.000.
Heise, Barrett Henry; and Dokken, Roger Nels, to Union Carbide Corporation. Use of CO_2 in Argon-Oxygen Refining of Molten Metal. 3,861,888, Cl. 75-60.000.
Heisler, Raymond A. Apparatus for molding a plastic container having a molded handle pivotally retained by an integrally formed attachment. 3,861,840, Cl. 425-130.000.
Heitmann, Wilhelm: *See—*
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Hekimian Laboratories, Inc.: *See—*
Hekimian, Norris C.; and Turner, James F., 3,862,380.
Hekimian, Norris C.; and Turner, James F., to Hekimian Laboratories, Inc. Intermodulation distortion analyzer. 3,862,380, Cl. 179-175.30R.
Held, Manfred; and Spies, Johann, to Messerschmitt-Bolkow-Blohm GmbH. Ignition device having an ignition sequence including fuse elements for preventing an unintentional release. 3,861,312, Cl. 102-70.20G.
Hella, Richard A.: *See—*
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Heller, Hansjorg; Rody, Jean; and Keller, Ernst, to Ciba-Geigy AG. Light stable linear polycarbonamide and polyester materials. 3,862,087, Cl. 260-47.0CZ.
Helmschrott, Norbert: *See—*
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Hendrick, Ross Melvin; and Gabbert, James D., to Monsanto Company. Lactam-polyol-acyl polyactam terpolymers. 3,862,262, Cl. 260-857.0PG.
Hendrickson, James A., to Xerox Corporation. Method for measuring heat and pressure characteristics of fusing apparatus. 3,861,219, Cl. 73-432.00R.
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Henry, Carl M. Tubular shaped projectile for sporting games. 3,861,683, Cl. 273-106.00R.
Henry, Richard D. Apparatus for continuously monitoring standing water on aircraft runways. 3,861,212, Cl. 73-304.00R.
Henschler, Dietrich; Wagner, Josef; and Hampel, Hans, to Chemisch-Pharmazeutische Fabrik Adolf Klinge & Co. Sympathicomimetic acyloxy-phenylethanolamine. 3,862,213, Cl. 260-477.000.
Hermann, Paul F., to Kenics Corporation. Electrolytic cell. 3,862,022, Cl. 204-272.000.
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Heurlen, Olof Torgny. Firing mechanism in double-barrel guns. 3,861,069, Cl. 42-1.00Y.
Hewett, Colin Leslie; and Savage, David Samuel, to Akzona Incorporated. Novel 2β-hydroxy-3α-amino-steroids and derivatives thereof and the processes for their preparation. 3,862,196, Cl. 260-397.400.
Heyman Manufacturing Company: *See—*
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Hickey, Richard M., to Environmental Enterprises, Inc. Aqueous polymeric compositions of nonionic urethane polymer and acrylic polymer. 3,862,074, Cl. 260-29.6NR.
Hiestermann, Kurt, to Volkswagenwerk Aktiengesellschaft. Throttle valve arrangement for a combustion engine. 3,861,377, Cl. 123-198.00D.
High Voltage Engineering Corporation: *See—*
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Higuchi, Hisayuki: *See—*
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Hildebrandt, Paul R.: *See—*
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Hildebrandt, Ullrich; and Hofmann, Albert, to Linde Aktiengesellschaft. Method of making insulated ducts. 3,861,022, Cl. 29-455.000.
Hilgeman, Clarence B.; and Poellot, E. Roe, Jr., to Allis-Chalmers Corporation. Two pole synchronous reluctance motor. 3,862,446, Cl. 310-163.000.
Hill, Ruth Linda: *See—*
Borror, Alan L.; Hill, Ruth Linda; and Reid, Jerome L., 3,861,920.
Hillen, Henri Fredericus Josephus Marie, to Foundation Patent & Investment Company, N.V. Apparatus for depositing under water a flowable hardenable or not hardenable mass. 3,861,157, Cl. 61-63.000.
Himmele, Walter; and Hoffmann, Werner, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Pent-4-en-1-als and their production. 3,862,235, Cl. 260-598.000.
Hindermann, Peter: *See—*
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Hings, Donald Paul, to Rogers, Blythe T.; Page, William R.; and Russell, Robert F., part interest to each. Container cover assembly. 3,861,558, Cl. 220-55.700.
Hiramatsu, Takeo; Yahata, Kenji; and Futaki, Shigeki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Automatic clearance adjusting device for hydraulically operated disc brake. 3,861,502, Cl. 188-196.00V.
Hirano, Itsuro. Dehumidification of air. 3,861,165, Cl. 62-93.000.
Hirashima, Kenzo: *See—*
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Ono, Yuichi; Kurata, Kazuhiro; Ogirima, Masahiko; and Shinoda, Toshimitu, 3,861,969.
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Takeuchi, Seiji; Takata, Yoshinori; and Fujita, Kazunori, 3,862,038.
Hitch, Thomas R., to Harris-Intertype Corporation. Sheet delivery system. 3,861,259, Cl. 83-106.000.
Hobbs, James C., II. Self-closing terminal connector. 3,861,780, Cl. 339-276.00T.
Hodge, John S. Building structure. 3,861,102, Cl. 52-236.000.
Hoerner Waldorf Corp.: *See—*
Locke, Frank W., 3,861,538.
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Hoffman, Hellmut; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. N,n-dimethyl-o-[alkyl-3-alkylmercapto-1,2,4-triazolyl(5)]-carbamic acid esters. 3,862,125, Cl. 260-308.00R.
Hoffman, William C.: *See—*
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Hoffmann, Horst; Srna, Christian; Sabelus, Guenther; Falkenstein, Georg; and Strauss, Udo. Subbing layers comprising polyamide and phenolic resin for metal bases of photopolymerizable elements. 3,861,921, Cl. 96-86.00P.

Hoffmann-La Roche Inc.: *See—*
Edenhofer, Albrecht; and Spiegelberg, Hans, 3,862,158.
Jernow, Jane Liu; and Rosen, Perry, 3,862,180.

Hoffmann, Ralf; and Wennemann, Werner. Apparatus for the production and/or testing of welded helical seam pipe. 3,861,574, Cl. 228-9.000.

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Holcomb, William P.: *See—*
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Holcombe, Gordon B. Luminescent fishing lure. 3,861,072, Cl. 43-17.600.

Holder, Charles B.: *See—*
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Hollingsworth, Clinton Allen, to Borden, Inc. Thin film defluorination of phosphate rock. 3,862,346, Cl. 426-381.000.

Holtschmidt, Hans: *See—*
Findeisen, Kurt; Wagner, Kuno; and Holtschmidt, Hans, 3,862,168.

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Honeywell Inc.: *See—*
Lane, Charles E., III, 3,862,394.

Honnert, Quentin E.: *See—*
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Hood, Bobby Jack; and Hawkins, Claude Don, to Moss-Thornton Company, Inc. Adjustable overhang construction apparatus. 3,861,634, Cl. 248-228.000.

Hooftman, Johannes Philippus: *See—*
Oosterling, Pieter Adriaan; and Hooftman, Johannes Philippus, 3,861,600.

Hooker Chemicals & Plastics Corporation: *See—*
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Lowe, Edward James; and Ridgway, Frederick Arthur, 3,861,882.

Hooven, Frederick, to Gudebrod Bros. Silk Co., Inc. Wire harness clip. 3,861,015, Cl. 29-203.0MW.

Hoover Ball and Bearing Co.: *See—*
Terry, Samuel M.; and Slominski, Walter V., 3,861,711.

Hoover, Leon J. Fire escape device. 3,861,496, Cl. 182-5.000.

Hope Kabushiki Kaisha: *See—*
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Hopper, Robert Thorenz. Swimmer training device. 3,861,675, Cl. 272-71.000.

Horak, Anthony, to Burroughs Corporation. Demountable ribbon reel. 3,861,614, Cl. 242-71.800.

Horak, Martin S., to Gamco Industries, Inc. Lock assembly and tool. 3,861,770, Cl. 339-37.000.

Horie, Katuyuki: *See—*
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Hornschuch, Hanns, to Ingersoll-Rand Company. Centrifugal gas compressor unit. 3,861,820, Cl. 415-64.000.

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Horton, Lawrence R.; Mumford, G. Val; Jackson, Charles A.; Holcomb, William P.; Horton, Catherine; and Willison, Charles, to Refrigerated Sea Water, Inc. Cooling system and heat transfer assembly. 3,861,162, Cl. 62-243.000.

Hosokawa, Toshio. Engine operating system. 3,861,151, Cl. 60-689.000.

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Houmet Corporation: *See—*
Barbero, Robert J., 3,861,449.

Howard, Homer E. Breakerless distributor and ignition system utilizing same. 3,861,370, Cl. 123-148.00E.

Howe, Gilbert D.: *See—*
Biermann, David; Grimes, Richard V.; Howe, Gilbert D.; and Critchlow, E. Forest, 3,861,828.

Howland, Walter L.: *See—*
Ramey, Woodrow W.; and Howland, Walter L., 3,861,035.

Hoyer, August, to Xerox Corporation. Liftable bail bar for allowing return of multi-ply separated sheets to stack. 3,861,671, Cl. 271-122.000.

Hrabovsky, Joseph V., to Rapid Technological Devices, Inc. Distributor apparatus including adjustable distributor plate and replaceable contact breaker module assembly. 3,862,384, Cl. 200-19.00R.

Huang, Tracy J.; Silvestri, Anthony J.; and Yurchak, Sergei, to Mobil Oil Corporation. Isoparaffin-olefin alkylation with added water and with a complex of a macroreticular acid cation exchange resin and bf . 3,862,258, Cl. 260-683.440.

Hubbard, Winchester L.: *See—*
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Huber, Robert H., to Singer Company, The. Chuck. 3,861,693, Cl. 279-61.000.

Huff, Basil D. Arch support and heel protector. 3,861,399, Cl. 128-622.000.

Hufstader, William H. Tail for a kite. 3,861,626, Cl. 244-153.00R.

Hughes Aircraft Company: *See—*
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Curtice, Beverly A.; and Hughes, James W., 3,861,468.

Huhta-Koivisto, Esko Ensio, to Puolustusministerio. Device in a galvanic battery for forming electrolyte. 3,861,957, Cl. 136-83.00R.

Hull, Evan B., to Multiform, Inc. Boat bumper. 3,861,345, Cl. 114-219.000.

Hume, Harold Frederick: *See—*
Farmer, Robert Clyde; and Hume, Harold Frederick, 3,861,175.

Humphreys Corporation: *See—*
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Hunt, Guilbert M., to Tokheim Corporation. Variable ratio drive mechanism for bicycles. 3,861,227, Cl. 74-217.00B.

Hunt, Robert; and Crandall, Paul S., to Gerrity Company, Inc. Continuous shear resistant timber girder. 3,861,109, Cl. 52-693.000.

Hunter, Bruce H.: *See—*
Charles, Wesley N.; Panaia, Robert L.; and Hunter, Bruce H., 3,861,038.

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Huszty, Denes; Illenyi, Andras; Nemeth, Ilona Magos Nee; and Szabados, Karoly, to Elektroakusztikai Gyar. Sound radiation system. 3,862,366, Cl. 179-1.00E.

Huxley, Thomas C., III; Garber, Duane L.; and Huxley, Thomas C., IV, to Ag. Automation. Straddle fork vehicle. 3,861,535, Cl. 214-6.00B.

Huxley, Thomas C., IV: *See—*
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Hydro Med Sciences Inc.: *See—*
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Ibrahim, Ghazi Zaki, to Dennison Manufacturing Company. Pressure sensitive electrophotographic reproduction sheets. 3,861,912, Cl. 96-1.500.

ICI Australia Limited: *See—*
Baklien, Asbjorn; and Kolm, Jan, 3,862,166.
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Ideal Toy Corporation: *See—*
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Igarashi, Takeo; and Takeuthi, Tadao, to Dai Nippon Printing Company Limited. Method for counting sheets of paper and apparatus. 3,862,402, Cl. 235-92.0SB.

Iida, Masaaki; Tazuke, Hideo; and Kageyama, Hiroo, to Ajinomoto Co., Inc. Optical resolution of dl-2-pyrrolidone-5-carboxylic acid. 3,862,132, Cl. 260-326.450.

Iizaka, Isao: *See—*
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Ikeda, Horiharu: *See—*
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Imai, Toshio: *See—*
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Plowman, Richard Edward, 3,862,325.
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Staniland, Philip Anthony; and Jarrett, Graham, 3,861,951.

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Perkins, Paul Raymond; and Bale, Christopher Ralph, 3,861,400.
Inamoto, Yoshiaki; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kadono, Takeji, to Kao Soap Co., Ltd. Diesters of tricyclic alcohols. 3,862,206, Cl. 260-468.00G.
Industrie Pirelli S.p.A.: *See—*
Bertelli, Italo; and Tangorra, Giorgio, 3,861,438.
Ingersoll, Clyde E., to Williams Gold Refining Company Incorporated. Method of investment casting a bright gold alloy. 3,861,455, Cl. 164-122.000.
Ingersoll-Rand Company: *See—*
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Hornschuch, Hanns, 3,861,820.
Ingram, Alexander John. Fishing lures. 3,861,075, Cl. 43-42.350.
Ingram, Woodrow H., II: *See—*
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Inose, Fumiyuki; Nakamura, Hideo; and Takasugi, Kazuo, to Hitachi, Ltd. Transmitting-and-receiving apparatus for performing data transmission through common bus. 3,862,364, Cl. 178-59.000.
Inose, Tadao; and Hirota, Minoru, to Kabushiki Kaisha Iijima Seisakusho. Apparatus for feeding sheets of paper or the like into a punching machine in neat stacks. 3,861,516, Cl. 198-35.000.
Inoue, Minoru: *See—*
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Inoue, Yasuyuki; and Koshio, Tomoaki, to Toyo Kogyo Co., Ltd. Balk ring for synchromesh apparatus. 3,861,509, Cl. 192-53.00F.
Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
Cheron, Jacques, 3,861,958.
Courboulay, Pierre; Cretin, Jacques; Anceau, Francois; and Beauducel, Claude, 3,861,585.
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Magdo, Ingrid E.; and Magdo, Steven, 3,861,968.
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Schreiber, William Lewis; Mosciano, Gerard Joseph; Pittet, Alan O.; Vock, Manfred; and Shuster, Edward Joseph, 3,862,340.
Vinals, Joaquin Francisco; Quinn, Alton Dewitt; and Pittet, Alan Owen, 3,861,403.
International Nickel Company Inc., The: *See—*
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International Telephone and Telegraph Corporation: *See—*
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Uyeda, Tim Minoru; and Workman, David Edward, 3,860,973.
International Video Corporation: *See—*
Guisinger, Barrett Earl, 3,862,355.
Interstate Electronics Corporation: *See—*
Brooks, Billy S., 3,862,406.
George, Richard E., 3,862,436.
Irlam, Phillip Sidney; and Yale, Brian, to Pilkington Brothers Limited. GLASS FIBER COMPOSITIONS OF R O-ROZrO -SiO . 3,861,926, Cl. 106-50.000.
Irvine, William Taylor. Receiving table for a guillotine. 3,861,258, Cl. 83-81.000.
Isailingold, Anatoly Lvovich; Levin, Veniamin Anatolievich; Pilipenko, Fedor Semenovich; Vernova, Tatyana Pavlovna; Stepanov, Gennady Arkadievich; Bushin, Alexandr Nikitich; Sirotkin, Boris Vasilievich; Kozin, Valentin Vasilievich; Basner, Mark Ekhetskelevich; Erofeeva, Aida Vladimirovna; Peshkova, Nina Prokopievna; Tuktarova, Luiza Saidovna; Kirnos, Yakov Yakovlevich; Mikhailov, Ruslan Konstantinovich; Dolinin, Nikolai Zakharovich; Rastvorov, Jury Nikolaevich; and Eratova, Valeria Lvovna. Method for preparing mono- and di-olefine hydrocarbons. 3,862,256, Cl. 260-680.00E.
Ishida, Masahiko; Oguri, Yoshitaka; Muroi, Tadashi; and Shimizu, Norio, to Hitachi, Ltd. Alkali extraction of microbial cellular proteins at high temperature. 3,862,112, Cl. 260-112.00R.
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Isono, Masao: *See—*
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Isowa, Yoshikazu; Takashima, Toshiyuki; Ohmori, Muneki; Kurita, Mideaki; Sato, Masanari; and Mori, Kaoru, to Sagami Chemical Research Center. Linear oligopeptides useful for the production of deferri-ferrichrome and ferrichrome. 3,862,110, Cl. 260-112.500.
Itasaka, Tokio, to Ebara Infilco Kabushiki Kaisha. Incinerator for unsegregated refuse. 3,861,332, Cl. 110-8.00C.
Itaya, Nobushige: *See—*
Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, 3,862,174.
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Ito, Isao, to Nippondenso Co., Ltd. Ball joint. 3,861,812, Cl. 403-71.000.
Itoda, Masaru; Kinoshita, Yoshio; and Yorisue, Kazumi, to Glory Kogyo Kabushiki Kaisha. Public rental locker. 3,860,994, Cl. 16-128.000.
Itoh, Kunio; Harada, Naohiko; and Yoshida, Takeo, to Shinetsu Chemical Company. Silicone rubber compositions. 3,862,081, Cl. 260-37.0SB.
Itoi, Kazuo: *See—*
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Englesson, Bertil; Eriksson, Karl-Ingvar; Kallstrom, Willy; and Stahl, Torvald, 3,861,690.
Iwasaki, Yasuhiro: *See—*
Uto, Yoshimitsu; Iwasaki, Yasuhiro; Yamamoto, Yoshihiro; Ooe, Tsutomu; and Nakayama, Ryohei, 3,861,883.
J. G. Anschultz GmbH: *See—*
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Jackson, David A.; and Shields, Martin A., to Bendix Corporation, The. Adaptive braking modulator. 3,861,757, Cl. 303-21.0AF.
Jackson, Raymond Pennoyer, to International Nickel Company Inc., The. Protective coating for metals. 3,861,938, Cl. 117-31.000.
Jackson, Richard L., to Jackson Communication Corp. Stringing puller. 3,861,650, Cl. 254-134.30R.
Jacob, Gernot, to Gotz Metallbau GmbH. Metal window frame. 3,861,085, Cl. 49-501.000.
Jaggers, Edward C., to Jaggers Equipment Company Inc. Blind hole bolt. 3,861,268, Cl. 85-3.00R.
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Jaques, Roland; Stanek, Jaroslav; and Rossi, Alberto, to Ciba-Geigy Corporation. Ether and ester substituted d-glycofuranoside compounds. 3,862,121, Cl. 260-210.00R.
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Jauch, Kurt; and Schafer, Rolf, to said Jauch, by said Schafer. Switch plate machine. 3,861,245, Cl. 74-826.000.
Jauch, Kurt: *See—*
Jauch, Kurt; and Schafer, Rolf (assors. to said Jauch, by said Schafer), 3,861,245.
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Jelinek, Arthur Gilbert. Phosphonamide plant growth regulants. 3,861,898, Cl. 71-76.000.
Jellinek, Karl; Post Udo; and Oellig, Rudi, to Rutgerswerke Aktiengesellschaft. Polyether containing cycloaliphatic structural elements and hydroxyl groups. 3,862,093, Cl. 260-75.0EP.
Jenkins, Thomas E., to General Electric Company. Dishwasher rack. 3,861,769, Cl. 312-311.000.
Jensen, Elmer R., Sr., to Raymond Lee Organization, Inc., The. Motorized ice bike. 3,861,492, Cl. 180-3.00R.
Jernow, Jane Liu; and Rosen, Perry, to Hoffmann-La Roche Inc. 2H-1,4-benzoxazin-3(4h)-ones. 3,862,180, Cl. 260-242.000.
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Joella, Thomas; and Mickus, Robert. Lighted table for the use with sewing machines. 3,862,409, Cl. 240-2.140.

Johannes, James H., to General Mills, Inc. Brownie frosting dry mix. 3,862,341, Cl. 426-162.000.

John Dusenbery Co., Inc.: *See—*
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Johns-Manville Corporation: *See—*
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Johnson, Edwin Lee: *See—*
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Johnson, Harlan B., to PPG Industries, Inc. Electrode having silicide surface. 3,862,023, Cl. 204-290.00F.

Johnson, Herbert; and Sillars, Frederick S., to USM Corporation. Electric safety control mechanism. 3,861,016, Cl. 29-203.00B.

Johnson, Howard L.: *See—*
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Johnson & Johnson: *See—*
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Johnson, Kendall R.; and Fjermestad, Arnold R., to Universal Cooperatives, Inc. Automatic milker take off assembly. 3,861,355, Cl. 119-14.080.

Johnson, Paul J., to Lucas Aerospace Limited. Hinged extension for rain-pipe downspouts. 3,861,419, Cl. 137-615.000.

Johnson, Robert P.; and Dorschner, Kenneth P. N-(c –c alkyl) diaralkylamines used to combat plant fungi. 3,862,330, Cl. 424-330.000.

Johnson, Ronald D. Pressure differential pumping system for dry bulk products. 3,861,830, Cl. 417-149.000.

Johnson Service Company: *See—*
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Johnston, David B. R., to Merck & Co., Inc. Process to prepare novel antibiotic intermediates. 3,862,182, Cl. 260-243.00C.

Johnston, Henry William, to R. G. Dixon & Company Limited. Mountings for rotary floor treating elements. 3,860,989, Cl. 15-49.00R.

Johnston, Mack S., to Draft Systems, Inc. Beer tap. 3,861,569, Cl. 222-400.700.

Jones, Carmen B., to General Electric Company. Turbofan engine having counterrotating compressor and turbine elements and unique fan disposition. 3,861,139, Cl. 60-226.00R.

Jones, Christopher Robin: *See—*
Williams, Malcolm; Brunt, Geoffrey Albert Kenyon; and Jones, Christopher Robin, 3,861,363.

Jones, Donald C.; and Neuworth, Martin B., to Continental Oil Company. Pure 2,3,6-trimethylphenol. 3,862,248, Cl. 260-621.00B.

Jones, Duane A.; and Jordan, Wesley A., to United States of America, Agriculture. Flotation-beneficiation of phosphate ores. 3,862,028, Cl. 209-166.000.

Jones, Harold F.: *See—*
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Jonsson, Finn Lennart; and Trolle, Sten, to AB Carbox. Device for mechanical stabilization of tensile-prestressed windings. 3,861,618, Cl. 242-159.000.

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Joslin, Kenneth E. Hybrid vehicular power system. 3,861,484, Cl. 180-65.00A.

Joslyn, Larry James, to Sybron Corporation. Sterility analyzer. 3,861,875, Cl. 23-280.00B.

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Joyce, John E. Density gradient fractionator. 3,862,029, Cl. 209-172.000.

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Juris, Albert L. Extendable adjustable mailbox support means. 3,861,635, Cl. 248-284.000.

Justice, Roger L.: *See—*
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Kabas, Guglielmo; Schlaepfer, Hans; and Fletcher, Ian John, to Ciba-Geigy AG. 2-Stilbenyl-4-styryl-v-triazoles. 3,862,179, Cl. 260-240.00C.

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Kabushiki Kaisha Sato Kenkyusho: *See—*
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Kaelin, Joseph Richard. Apparatus for the comminution of domestic refuse. 3,861,601, Cl. 241-31.000.

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Kaiser, Carl; and Ross, Stephen T., to SmithKline Corporation. Amino-4-benzyloxy-3-ureidoacetophenones. 3,862,222, Cl. 260-553.00A.

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Kalopissis, Gregoire: Abegg, Jean-Louis; Ghilardi, Guiliana; and de Beaulieu, Henri Philippe, to Societe Anonyme dite: L'Oreal. N,n'-di(hydroxymethylcarbamyl)cystamine. 3,862,221, Cl. 260-553.00R.

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Kamit, Norimasa; and Terakado, Ryozi, to Nippon Steel Corporation. Rolling process and rolling stand of steel plate. 3,861,188, Cl. 72-234.000.

Kampfer, John G., to Halliburton Co. Dual function logging tool and method. 3,862,417, Cl. 250-263.000.

Kanai, Hiromi: *See—*
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Katchka, Jay R., to Robertshaw Controls Company. Thermostatic flow control device. 3,861,587, Cl. 236-1.00H.
Kathawala, Faizulla G., to Sandoz, Inc. S-triazolo(1,5-d)benzodiazepin-6(7h)-ones. 3,862,137, Cl. 260-239.30T.
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Keller, Wolfgang, to Siemens Aktiengesellschaft. Apparatus for crucible-free zone melting. 3,862,348, Cl. 13-26.000.
Kellogg, Charles W., Jr., to No-Korrod, Inc. Liquid impermeable plastic case. 3,861,995, Cl. 161-162.000.
Kelly, Donald A. Modular closed cycle turbine system. 3,861,149, Cl. 60-669.000.
Kelmar, John J. Non-polluting internal combustion engine system. 3,861,367, Cl. 123-119.00A.
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Klutchko, Sylvester; Brown, Richard E.; and Von Strandtmann, Maximilian, to Warner-Lambert Company. Substituted chromone-3-carbonitriles, carboxamides and carboxylic acids. 3,862,143, Cl. 260-345.200.
Knape, Richard S., to General Motors Corporation. Solenoid valve. 3,861,644, Cl. 251-139.000.
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Knox, Howard W. Sway control for towed vehicles having variable control feature. 3,861,717, Cl. 280-446.00B.
Knudson, Gary A. Bending apparatus for forming elbows and the like. 3,861,184, Cl. 72-30.000.
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Kobayashi, Kazunari; Higuchi, Hisayuki; and Maki, Michiyoshi, to Hitachi, Ltd. Mask for aligning patterns. 3,861,798, Cl. 355-61.000.
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Koepfer, Voler, to Bayern-Chemie Gesellschaft Fur flugchemische Antriebe Mit beschrankter Haftung. Ammunition comprising a launcher tube and a reaction-driven missile. 3,861,272, Cl. 89-1.816.
Kofink, Siegfried, to Eberspacher, J. Space heater particularly for vehicles. 3,861,590, Cl. 237-12.30C.
Kofsky, Melvin; and Klebanow, Isidore, to Super Bowl Pet Foods, Inc. Animal food and method of making the same. 3,862,336, Cl. 426-1.000.
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Kovach, Leslie J. Skin massaging instrument. 3,861,383, Cl. 128-66.000.
Koyama, Akira; and Mochizuki, Yoshinari, to Hope Kabushiki Kaisha. Ski boot. 3,861,067, Cl. 36-2.5AL.
Koyanagi, Shinzaburo; Sato, Setsuko; and Koyanagi, Takasuke. Garbage incinerator. 3,861,336, Cl. 110-14.000.
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Kroposki, Lorraine M.; and Yoshimine, Masao, to Dow Chemical Company, The. Preparation of 0-aryl 0,0-dialkyl phosphorothioates. 3,862,273, Cl. 260-973.000.
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Kudsi, Bader S., to International Business Machines Corporation. Fusing apparatus. 3,861,863, Cl. 432-60.000.
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Magic Dot, Inc.: *See—*
Larson, Willis A., 3,862,432.

Magnotta, Frank; Ketley, Arthur D.; and Matheson, Suzanne E., to W. R. Grace & Co. Continuous tone lithographic plate and method of making. 3,861,917, Cl. 96-33.000.

Mahekawa, Ryooichi: *See—*
Hatanaka, Masayuki; Mahekawa, Ryooichi; and Maruyama, Hideo, 3,862,082.

Maki, Michiyoshi: *See—*
Kobayashi, Kazunari; Higuchi, Hisayuki; and Maki, Michiyoshi, 3,861,798.

Makins, James L., to Xerox Corporation. Multiple circuit board connector. 3,861,775, Cl. 339-17.00L.

Malik, Raj K., to General Dynamics Corporation. Diffusion molding apparatus. 3,861,839, Cl. 425-78.000.

Maling, John E. Paper bag sculptures and method for forming the same. 3,861,279, Cl. 93-1.00R.

Mallary, Miller B.; and Hunter, Joseph L., to Engelhard Minerals & Chemicals Corporation. Method for improving the brightness of kaolin clay. 3,861,934, Cl. 106-288.00B.

Maltby, Jack; and Stubbs, Dennis, to British Steel Corporation. Rolling mills. 3,861,190, Cl. 72-247.000.

Mandoki, Andor: *See—*
Prohaszka, Janos; Mandoki, Andor; and Welesz, Rudolf, 3,861,658.

Manis, Charles A.; and Wood, Charles E., to Packaging Corporation of America. Foldable container. 3,861,579, Cl. 229-23.00R.

Manly, Donald G.: *See—*
Dixon, Dale D.; Manly, Donald G.; and Recktenwald, Gerald W., 3,862,284.

Mannesmann-Leichtbau GmbH: *See—*
Erhart, Dieter, 3,861,106.

Manowitz, Bernard: *See—*
Steinberg, Meyer; Manowitz, Bernard; and Waide, Charles H., 3,861,155.

Manser, Josef, to Gebrueder Buehler AG. Extruder device for preparing foodstuffs. 3,861,287, Cl. 99-348.000.

Marans, Nelson S., to W. R. Grace & Co. Thermoplastic adhesives. 3,862,099, Cl. 260-93.700.

Maraulja, Matthew D.; Attaway, John A.; and Atkins, Cedric D., to International Flavors & Fragrances Inc. High protein citrus food products. 3,862,342, Cl. 426-185.000.

Marcacci, James P.: *See—*
Heckrotte, John R., Sr.; and Marcacci, James P., 3,861,180.

Maringer, Robert E.: *See—*
Mobley, Carroll E.; and Maringer, Robert E., 3,861,450.

Marion, Donald L.: *See—*
Motier, John F.; and Marion, Donald L., 3,862,067.

Marmonier, Pierre; and Sauvage, Michel, to Commissariat a L'Energie Atomique. Handling system for a nuclear reactor. 3,862,001, Cl. 176-87.000.

Maroschak, Ernest J. Corrugated drainage pipe with staggered arrangement of plateau recesses. 3,861,152, Cl. 61-11.000.

Maroschak, Ernest J. Corrugated drainage pipe with staggered arrangement of rib interruptions. 3,861,153, Cl. 61-11.000.

Marsh, Robert Claude, to Bio-Dynamics, Inc. Portable clean-air generator. 3,861,894, Cl. 55-316.000.

Martel, Jacques; Buendia, Jean; and Costerousse, Germain, to Roussel Uclaf. Derivatives of 9h-pyrido(3,4-b) indole and process of preparation. 3,862,160, Cl. 260-295.00C.

Martin, John C., to Bunn-O-Matic Corporation. Coffee making machine convertible between funnel-filter operation and pouch pack operation. 3,861,285, Cl. 99-295.000.

Martin, Lorin M., to Fletcher Engineering, Inc., a part interest. Tool sharpener. 3,861,087, Cl. 51-205.00R.

Martin, Manfred: *See—*
Scharff, Gerhard; Martin, Manfred; Swodenk, Wolfgang; Dornfeldt, Wolfram; and Grolig, Johann, 3,862,236.

Maruta, Isao; Nakashio, Seizo; Hayatsu, Kazuo; and Kono, Yoichi, to Sumitomo Chemical Company, Limited. Production of modified polyphenylene oxide. 3,862,263, Cl. 260-874.000.

Maruyama, Hideo: *See—*
Hatanaka, Masayuki; Mahekawa, Ryooichi; and Maruyama, Hideo, 3,862,082.

Marvin Glass & Associates: *See—*
Breslow, Jeffrey D.; and Kaelin, Bette M., 3,861,686.

Masaki, Kenji; and Aono, Shigeo, to Nissan Motor Company Limited. Air-fuel mixture supply control system for use with carburetors for internal combustion engines. 3,861,366, Cl. 123-119.00R.

Maschinenfabrik J. S. Petzholdt: *See—*
Schmitt, Armin, 3,861,656.

Maskell, Stanley J. Flood barrier. 3,861,081, Cl. 49-70.000.

Mason, Thomas Ernest; Fox, Cyril; and Campbell, Robert Edward, to British Ropes Limited. Ferrules on rope or strand. 3,861,811, Cl. 403-41.000.

Massa, Michael J. Safety ski harness cable system. 3,861,318, Cl. 104-113.000.

Massoubre, Jean-Marie, to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie. Manufacture of thin, continuous steel wires. 3,861,452, Cl. 164-82.000.

Matharani, Baldev A.; and Hirsch, Nathan M., to Clinical Technology Incorporated. Optical analysis of fluids. 3,861,877, Cl. 23-230.00B.

Matheson, Suzanne E.: *See—*
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Matsudaira, Takeshi: *See—*
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Matsui, Katsuaki: *See—*
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Matsui, Shunji; Hayakawa, Yoshikazu; and Hirashima, Kenzo, to Nissan Motor Company Limited. Apparatus for deflating an inflatable occupant restraint device. 3,861,712, Cl. 280-150.0AB.

Matsuki, Takashi: *See—*
Yamamoto, Atsushi; Teranishi, Hiroshi; Furukawa, Tadayasu; and Matsuki, Takashi, 3,862,290.

Matsumoto, Takeshi; Suzuki, Satahei; and Inoue, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. Tuning slide for brass musical instruments. 3,861,264, Cl. 84-387.000.

Matsumura, Shoichi; Kato, Yasushi; and Uekita, Masakazu, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method of selective hydrogenation of cyclopentadiene. 3,862,252, Cl. 260-666.00A.

Matsunaga, Douglas S.: *See—*
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Matsuo, Takashi: *See—*
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Harada, Masahiro; Hirokawa, Yuuji; Nozaki, Syohei; Miyahara, Kenji; and Takeda, Matsuyuki, 3,861,962.
Kawamata, Yukio; Yamamoto, Keisuke; and Fujimori, Toshimitsu, 3,862,354.
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Wakami, Noboru; Yabu, Toshiomi; and Hosono, Hiroo, 3,861,622.

Matsuura, Yukito; Kakiwaki, Yasushi; Yoshizaki, Takashi; and Tanaka, Takeshi, to Nippon Acchakutanahi Seizo Kabushiki Kaisha. Apparatus for attachment of a connector to an end of a wire. 3,861,018, Cl. 29-203.000.

Mattson, Richard W., to Eltra Corporation. External fine timing adjustment. 3,861,225, Cl. 74-54.000.

Matuska, James E., to Sealth Aero Marine. Door control device. 3,860,993, Cl. 16-52.000.

Maurel, Pierre; and Duhart, Pierre, to Aluminum Pechiney. Process for the continuous acid treatment of crude clays and schists. 3,862,293, Cl. 423-126.000.

Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. 1-Carbalkoxy-2-cyano-vinyl-(thiono)-phosphoric ((phosphonic) acid esters of ester amides. 3,862,269, Cl. 260-940.000.

Mauro, Richard. Gun sight. 3,861,050, Cl. 33-233.000.

Maxetron Industries, Inc.: *See—*
Maxwell, John H., 3,862,410.

Maxey, W. Clarence, to Rubatex Corporation. Apparatus for positioning, holding and die-cutting resilient and semi-resilient strip material. 3,861,261, Cl. 83-387.000.

Maxwell, John H., to Maxetron Industries, Inc. Bicycle warning light. 3,862,410, Cl. 240-7.550.

Mayer, John W. Electrical installation tool. 3,860,981, Cl. 7-5.300.

Mazin, Evgeny Petrovich: *See—*
Sokolsky, Dmitry Vladimirovich; Zhubanov, Kair Akmetovich; Shumateva, Ninel Fedorovna; Mazin, Evgeny Petrovich; and Sokolskaya, Aida Mosieevna, 3,862,054.

Mazzi, Aramis, to Nova Tec Establishment. Pivotable suction device for retaining the threads in a circular hosiery machine. 3,861,177, Cl. 66-145.00S.

McCluskey, John J.: *See—*
Wilson, Edward L.; McCluskey, John J.; Bell, Ronald Z.; Linak, Richard T.; and Armstrong, Gordon P., 3,861,982.

McConnell, Richard L.; Taylor, Robert B.; and Grant, Peter M., to Eastman Kodak Company. Polypropylene/acrylic acid graft copolymers. 3,862,266, Cl. 260-878.00R.

McConnon, Edward. Horseshoe with flexible sections. 3,861,472, Cl. 168-15.000.

McCormick, John Paradis. Instrument casing. 3,861,559, Cl. 220-82.00A.

McCullock Corporation: *See—*
Dooley, James L.; and Harasta, Clarence J., 3,861,374.

McCullough, Edward E.; and Petersen, Jimmy, to Thiokol Corporation. Inflatable inspection instrument. 3,862,359, Cl. 178-7.100.

McDonald, Clarence A., to National Automatic Tool Company. Honing tool with guide means to prevent tool wear. 3,861,091, Cl. 51-331.000.

McDonnell Douglas Corporation: *See—*
Afrance, Frank C.; Rosa, Albert G.; and Haas, Ronald J., 3,861,963.
Sheratte, Martin B., 3,862,048.

McDowell, Michael V.: *See—*
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McEachron, John C.: *See—*
Schindler, Edgar C.; and McEachron, John C., 3,862,351.

McGarry, George: *See—*
Woods, Gilbert Frederick; Cairns, James; and McGarry, George, 3,862,194.

McGrath, Carol Beverley; and Scanlon, John Warren, to Lever Brothers Company. Detergent composition containing blend of mixed fatty acid derivatives. 3,862,049, Cl. 252-108.000.

McGraw, Marion C. Luggage with transparent liner. 3,861,504, Cl. 190-41.00C.

McHan, Thaddeus D. Tomato carton. 3,861,578, Cl. 229-15.000.

McKain, Rodger W.: *See—*
Beckert, Werner F.; Dengel, Ottmar H.; and McKain, Rodger W., 3,862,052.

McKee, Dale P. Retractile door step for motor homes. 3,861,713, Cl. 280-166.000.

McKinnon, Donald J.: *See—*
McNamara, Mary T.; Davis, Dennis J.; Oglesbee, John W.; Krawczak, Gale F.; and McKinnon, Donald J., 3,861,759.

McLain, Charles D. Heat exchange tube. 3,861,462, Cl. 165-179.000.

McLaren, Edwin C.: *See—*
Tolaas, William M.; and McLaren, Edwin C., 3,861,576.

McLennan, Lyall A. Abutment swivel doorstop. 3,861,726, Cl. 292-67.000.

McLeod, Will Park. Brick laying device. 3,861,111, Cl. 52-749.000.

McMaster, Clarence O.: *See—*
Chiswell, Earl; and McMaster, Clarence O., 3,861,799.

McNair, Samuel L., to Dazey Products Company. Portable hair dryer. 3,861,060, Cl. 34-97.000.

McNamara, Mary T.; Davis, Dennis J.; Oglesbee, John W.; Krawczak, Gale F.; and McKinnon, Donald J., to Bendix Corporation, The. Adaptive braking system. 3,861,759, Cl. 303-21.00P.

McRowe, Arthur W., to B. F. Goodrich Company, The. Vinyl chloride polymers containing potassium zinc cuprocyanide. 3,862,086, Cl. 260-45.75C.

McWhirter, Joe R.; and Shepherd, Donald O., to Pharn Yarns, Incorporated. Apparatus for twisting together and knitting yarns. 3,861,176, Cl. 66-137.000.

McWhorter, Edward M. Internal combustion engine combustion control crankshaft. 3,861,239, Cl. 74-602.000.

Mead Corporation, The: *See—*
Calvert, Rodney K., 3,861,530.

Mead, James Edwin. Trash receptacle device. 3,861,767, Cl. 312-250.000.

Mearl Corporation, The: *See—*
Waitkins, George R.; Deluca, Carmine V., Jr.; Miller, Harold A.; and Wilcox, Forrest S., 3,861,946.

Mecoutil Societe a Responsibilite Limitee: *See—*
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Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Prikhodko, Valery Alexandrovich; and Kumysh, Ilya Iosifovich. Method of electroslag melting of semiannular metallic ingot. 3,861,448, Cl. 164-52.000.

Meguro, Kanji: *See—*
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Meier, Rene: *See—*
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Melos, Norman R. Refuse handling device. 3,861,298, Cl. 100-218.000.

Meloy, Thomas P., to Melpar, Inc. Material indentification coding methods and systems. 3,861,886, Cl. 44-51.000.

Melpar, Inc.: *See—*
Meloy, Thomas P., 3,861,886.

Mendelsoh, Morris A.: *See—*
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Mendoza, Hector. Direct transmission system for bicycles. 3,861,715, Cl. 280-260.000.

Mentone, Pat F. Rigidizing process for screens with aluminum frames. 3,862,018, Cl. 204-32.000.

Merand, Michel: *See—*
Genod, Robert; and Merand, Michel, 3,862,244.

Mercadante, Joseph: *See—*
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Mercade, Venancio V., to Engelhard Minerals & Chemicals Corporation. Purification of clay by selective flocculation. 3,862,027, Cl. 209-5.000.

Mercier, Jean: *See—*
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Merck & Co., Inc.: *See—*
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Meredith, Fields. Jack structure. 3,861,647, Cl. 254-4.00R.

Merger, Franz; Duembgen, Gerd; and Fuchs, Werner. Production of 2,2-dimethyl-1,3-propanediol monoesters of hydroxypivalic acid. 3,862,215, Cl. 260-484.00R.

Mermelstein, Robert: *See—*
Thettu, Raghulinga R.; and Mermelstein, Robert, 3,861,860.

Merrill, Duane F.; and Lavan, Philip J., to General Electric Company. Process for coating substrates using fast curing silanol-containing organopolysiloxane resins. 3,861,939, Cl. 117-132.0BS.

Merrill, Robert E., to Bernstein, Daniel A. Pressure actuator. 3,861,304, Cl. 100-269.00A.

Merrill, Walter B. Tree stand. 3,861,629, Cl. 248-44.000.

Mertens, Robert C.; and Harper, Donald W., to United States of America, Army. Zero volume rocket ignition system. 3,861,310, Cl. 102-49.700.

Mesdan di Messa Pietro: *See—*
Messa, Pietro, 3,861,725.

Messa, Pietro, to Mesdan di Messa Pietro. Automatic knot-forming machine for the formation of the fisher's knot. 3,861,725, Cl. 289-2.000.

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Messerschimitt-Bolkow-Blohm GmbH: *See—*
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Meyer, Engelbert A., to USM Corporation. Fastener. 3,860,999, Cl. 24-73.0FT.

Meyer, Erwin: *See—*
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Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. Certain-2-amino-1,4-dihydro-4-phenyl-6-lower alkyl (or phenyl)-3-pyridinecarboxylates. 3,862,162, Cl. 260-295.50R.

Meyers, Edward: *See—*
Parker, William Lawrence; and Meyers, Edward, 3,862,315.

Mezey, Charles C., to Full Mold Process, Inc. Structure for and method of constructing trim dies. 3,861,454, Cl. 164-93.000.

Michalko, Ignatius, to Power Conversion, Inc. Battery construction capable of safely venting internal pressure. 3,861,964, Cl. 136-177.000.

Michigan Chemical Corporation: *See—*
Anderson, Arnold L., 3,862,085.

Mickus, Robert: *See—*
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Mignotte, Henry X., to Baker Oil Tools Inc. Method of selective formation treatment. 3,861,465, Cl. 166-255.000.

Mikhailov, Ruslan Konstantinovich: *See—*
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Milbrada, Edward J., to Procter & Gamble Company, The. Dyeing human hair with oxidation dyes and arginine or a protamine protein. 3.861,868, Cl. 8.10.2-.

Milkovich, Ralph; and Chiang, Mutong T., to CPC International Inc. Process for preparing copolymerizable macromolecular monomers having a substantially uniform molecular weight distribution. 3,862,097, Cl. 260-93.50A.

Milkovich, Ralph; and Chiang, Mutong T., to CPC International, Inc. Alpha-olefin terminated polystyrene macromolecular monomers having a substantially uniform molecular weight distribution. 3,862,098, Cl. 260-93.50R.

Milkovich, Ralph; and Chiang, Mutong T., to CPC International Inc. Acrylate and methacrylate terminated polydiene macromolecular monomers having a substantially uniform molecular weight distribution. 3,862,101, Cl. 260-94.70A.

Milkovich, Ralph; and Chiang, Mutong T., to CPC International Inc. Alpha-olefin terminated polydiene macromolecular monomers having a substantially uniform molecular weight distribution. 3,862,102, Cl. 260-94.70R.

Milkovich, Ralph; Chiang, Mutong T.; and Schulz, Gerald O., to CPC International Inc. Chemically joined, phase separated graft copolymers having diblock polymeric sidechains. 3,862,267, Cl. 260-878.00R.

Milkovich, Ralph: *See—*
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Miller, Ervin W.: *See—*
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Miller, Harold A.: *See—*
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Miller, Kenneth M.: *See—*
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Miller, Robert C., to Nabisco, Inc. Apparatus for producing irregularly shaped expanded food products. 3,861,844, Cl. 425-207.000.

Miller, Roger L.; Sharp, James H.; and Lardon, Marcel A., to Xerox Corporation. Process. 3,862,127, Cl. 260-314.500.

Miller, Roscoe E.: *See—*
Chernish, Stanley M.; and Miller, Roscoe E., 3,862,301.

Millmaster Onyx Corporation: *See—*
Adams, Phillip; and Petrocci, Alfonso N., 3,862,318.

Milosavich, Bernard S., to Singer Company, The. Radio frequency interference shielding. 3,862,350, Cl. 174-35.00R.

Milzner, Karlheinz; and Reisser, Fritz, to Sandoz Ltd., (a/k/a Sandoz AG). Pyrimidinyl phosphoric and thiophosphoric acid esters. 3,862,188, Cl. 260-251.00P.

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Minoda, Minoru, to Fuji Photo Film Co., Ltd. Process for the manufacture of silver halide photosensitive materials. 3,861,922, Cl. 96-87.00R.

Minolta Camera Kabushiki Kaisha: *See—*
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, 3,861,613.
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Mirchevsky, Petr Nikolaevich: *See—*
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Mitchell, Alberta B.; and Moppett, Charles E., to Dow Chemical Company, The. N-substituted derivatives of 3-carboxamide and 3-thiocarboxamide 7-(3-chloro-2-propenyl)-1,3,5,7-tetraazabicyclo (3.3.1) nonane and preparation. 3,862,187, Cl. 260-248.0NS.

Mitchell, Russell L.: *See—*
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Mitchell, Wayne D.; and Metzger, Paul T., to Sybron Corporation. Electro-pneumatic transducer. 3,861,411, Cl. 137-82.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Nabetani, Hiroshi; Ueda, Atsushi; Uota, Kousaku; and Ishii, Mitsuaki, 3,862,441.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
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Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Mitsuda, Hisateru; Yasumoto, Kyoden; and Tonomura, Benichiro, to Hitachi, Ltd. Method for obtaining a protein isolate from hydrocarbon assimilating microbial cells. 3,862,109, Cl. 260-112.00R.

Mitsui Petrochemical Industries, Ltd.: *See—*
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Mitsui Toatsu Chemicals, Incorporated: *See—*
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Miyabayashi, Yoshiyuki: *See—*
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Miyahara, Kenji: *See—*
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Miyake, Toshio; and Sato, Yoshinori, to Hayashibara Company. Process for producing aldonic acids and starch sugars containing aldonic acids. 3,862,005, Cl. 195-47.000.

Miyamoto, Takehiko, to Takachiho Koeki Kabushiki Kaisha. Positioner for adjusting inclination and position of an object from one direction. 3,861,233, Cl. 74-479.000.

Miyano, Hiroshi: *See—*
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Mizutani, Seiki: *See—*
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Mizutani, Shigeo: *See—*
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Mizutani, Tadashi; and Ono, Soshiro, to Kuraray Plastics Co., Ltd. Elastic flexible hose. 3,861,424, Cl. 138-119.000.

Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, to Sumitomo Chemical Company, Limited. Cyclopropanecarboxylates. 3,862,174, Cl. 260-240.00R.

Moberly, Charles W., to Phillips Petroleum Company. Preparation of nitrile polymers with cycloaliphatic mercaptans as polymerization modifiers. 3,862,274, Cl. 260-879.000.

Moberly, Charles W.: *See—*
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Mocearov, Vladimir: *See—*
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Moen, George A. Acupuncture needle. 3,861,392, Cl. 128-329.00A.

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Moffatt, Elbert M., to United Aircraft Corporation. Saturating magnetic control valve. 3,861,643, Cl. 251-129.000.

Mohr, George: *See—*
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Mohr, John Gilbert; Hartman, James William; and Arno, David Michael, to Johns-Manville Corporation. Traversing mechanism. 3,861,608, Cl. 242-43.000.

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Mollering, Hans: *See—*
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Molnar, Arpad A., to Molnar & Co., Inc. Ski construction. 3,861,699, Cl. 280-11.13L.

Molnar & Co., Inc.: *See—*
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Molter, Gunther; Iben, Kurt-Werner; and Zimmermann, Werner, to Messerschimitt-Bolkow-Blohm GmbH. Onboard lifting device with on-board drive for retracting and extending the lifting device. 3,861,542, Cl. 214-75.00G.

Monsanto Chemicals Limited: *See—*
Changani, Pushpkumar Dewanmal, 3,861,404.

Monsanto Company: *See—*
Anderson, George J.; and Ingram, Woodrow H., II, 3,862,060.
Coran, Aubert Yaucher; and Kerwood, Joseph Edward, 3,862,051.
Hendrick, Ross Melvin; and Gabbert, James D., 3,862,262.

Monsees, Claude E., to Wright Machinery Company, Inc. Article packaging apparatus. 3,861,121, Cl. 53-239.000.

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Montgomery, Thurman R., deceased, 3,861,546.

Montgomery, Thurman R., deceased (by Montgomery, Billie, executrix). Apparatus for lifting wallboard into multi-story buildings. 3,861,546, Cl. 214-621.000.

Moon, William T., Jr., to Robertshaw Controls Company. Flexure means for a control device or the like. 3,861,224, Cl. 74-17.800.

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Morgan, Charles R.; and Murphey, Richard C., to Mobil Oil Corporation. High temperature protectional apparatus for engine emissions catalytic converter. 3,861,143, Cl. 60-277.000.

Morgan Construction Company: *See—*
Kinnicutt, Roger, Jr., 3,861,615.

Morguson, George G. Work support for press brake. 3,861,193, Cl. 72-386.000.

Mori, Eika: *See—*
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Morrill, Alan, to No-Mar Products, Inc. Picture hanger assembly. 3,861,639, Cl. 248-489.000.

Morris, Earl L.; and Sally, Theodore J., to Acorn Engineering Co. Liquid soap dispensing system for penal institutions and the like. 3,861,568, Cl. 222-383.000.

Morrison, Neolan V. Cinch winch for saddling a horse. 3,861,126, Cl. 54-23.000.

Morse, Carl W. Combined door carrier and hanging device. 3,861,662, Cl. 269-17.000.

Morse, David S.: *See—*.
De Vries, Jonathan W.; Juaire, Phillip R.; and Morse, David S., 3,860,974.

Morton, Charles Gotwalt, to General Electric Company. High temperature asbestos insulated electrical conductor, and method of making same. 3,862,353, Cl. 174-121.0SR.

Morton-Norwich Products, Inc.: *See—*
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Mosciano, Gerard Joseph: *See—*
Schreiber, William Lewis; Mosciano, Gerard Joseph; Pittet, Alan O.; Vock, Manfred; and Shuster, Edward Joseph, 3,862,340.

Moser, Hans; and Vogel, Christian, to Ciba-Geigy Corporation. Herbicidal n-(alkoxyphosphinyloxy)-and n-(alkoxyphosphino-thioyloxy)-n-alkyl-n'-phenylureas. 3,861,899, Cl. 71-86.000.

Moser, Karl: *See—*
Forgo, Gabor; Meyer, Erwin; and Moser, Karl, 3,861,940.

Mosley, Robert L. Manhole cover lifting device. 3,861,649, Cl. 254-124.000.

Moss-Thornton Company, Inc.: *See—*
Hood, Bobby Jack; and Hawkins, Claude Don, 3,861,634.

Mossman, Ralph A., to Tektronix, Inc. Bistable storage tube having storage dielectric of phosphor particles coated with secondary emissive material. 3,862,450, Cl. 313-396.000.

Moteurs Goiot: *See—*
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Motier, John F.; and Marion, Donald L., to Atlantic Richfield Company. Flexible electrocoating composition derived from a low molecular weight copolymer of styrene and maleic anhydride. 3,862,067, Cl. 260-23.00S.

Mott, James D., to Hydril Company. Method and apparatus for inside blowout preventer drilling tool. 3,861,470, Cl. 166-315.000.

Mounts, William T., to Caterpillar Tractor Company. Parking brake actuating mechanism. 3,861,237, Cl. 74-516.000.

Mowrer, William F. Driving range. 3,861,680, Cl. 273-35.00B.

Mueller, Albrecht. 2-(2-Butynyloxy)-phenol. 3,862,238, Cl. 260-613.00D.

Mueller, Josef, to Fortuna-Werke Maschinenfabrik AG. Duplicating device for grinding or milling machines. 3,861,275, Cl. 90-13.400.

Mueller, Richard: *See—*
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Mulcahy, Harry William; Kent, John Allan; and Madura, Francis Eli, to Amsted Ind., Inc. Shiftable fifth wheel construction. 3,861,709, Cl. 280-407.000.

Muller, Albert F. Disposable template. 3,861,049, Cl. 33-175.000.

Muller, Richard, to Gebr. Hofmann KG. Method and device for removing material from workpieces, particularly for the application of correction in balancing. 3,861,817, Cl. 408-1.000.

Muller, Thomas P.: *See—*
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Mullinax, Harold L., Sr., to Owens-Illinois, Inc. Safety end of run feeder. 3,861,256, Cl. 83-5.000.

Multifold-International, Inc.: *See—*
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Multiform, Inc.: *See—*
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Multilam Corporation: *See—*
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Muntz, Eric P.; and Welkowsky, Murray S., to Xonics, Inc. Electrostatic image developer. 3,861,354, Cl. 118-629.000.

Murao, Kenji; Toriyama, Kazuhisa; Nakano, Fumio; Sato, Mikio; and Muroi, Tadashi, to Hitachi, Ltd. Electro-optical device utilizing a nematic liquid crystal of schiff base type. 3,861,782, Cl. 350-160.0LC.

Murayama, Keisuke; Toda, Toshimasa; Mori, Eika; Matsui, Katsuaki; Kurumada, Tomoyuki; Onta, Noriyuki; and Watanabe, Ichiro, to Sankyo Company Limited. 4,4-Di-alkoxy-2,2,6,6-tetramethyl piperidines. 3,862,155, Cl. 260-293.900.

Murayama, Masao; Seto, Eisuke; Enomoto, Hiroshi; Okubo, Takashi; Nomiyana, Yoshitsugu; and Saito, Katsuhide, to Nippon Shinyaku Co., Ltd. Novel derivatives of beta-phenoxyethanols. 3,862,210, Cl. 260-471.00C.

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Muto, Kikuo, to Gunze Kobunshi Kogyo Co. Ltd. Method and equipment for sealing the cap of bottles. 3,861,118, Cl. 53-167.000.

Myers, Melvyn John, to National Research Development Corporation. Radiation position detectors. 3,862,425, Cl. 250-366.000.

Nabetani, Hiroshi; Ueda, Atsushi; Uota, Kousaku; and Ishii, Mitsuaki, to Mitsubishi Denki Kabushiki Kaisha. Mos-fet timing circuit. 3,862,441, Cl. 307-293.000.

Nabisco, Inc.: *See—*
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Tingley, William E.; and Addiego, Joseph, 3,861,583.

Nagaoka, Tadashi, to Matsushita Electric Industrial Co., Ltd. Automatic recording medium changing device. 3,861,689, Cl. 274-10.00R.

Nagarajan, Ramakrishnan: *See—*
Hamill, Robert L.; and Nagarajan, Ramakrishnan, 3,862,008.

Nakada, Masahiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Control mechanism for carburetor automatic choke. 3,862,278, Cl. 261-52.000.

Nakai, Shiro: *See—*
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Naniwa Sangyo Co., Ltd.: *See—*
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Napoli, Louis Sebastian; and Reichert, Walter Francis, to RCA Corporation. Semiconductor devices and methods of making the same. 3,861,024, Cl. 29-579.000.

Narboux, Edmond: *See—*
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Nash, Alan Richard Brine. Dampers. 3,861,503, Cl. 188-276.000.

Nash, Alan Richard Brine. Deflection-sensitive arrangements. 3,861,707, Cl. 280-124.00F.

Nathan, Robert; and Fox, Morton, to DeMert & Dougherty, Inc. Spray gun mechanism. 3,861,596, Cl. 239-415.000.

National Automatic Tool Company: *See—*
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Naumann, Ilse. Foldable edge clamp for newspapers and magazines. 3,861,000, Cl. 24-81.0PC.
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Nelson, Ardell H. Floating cover for a tank. 3,861,555, Cl. 220-26.00S.
Nelson, Carl R.; Hery, Robert V.; and Baum, Joseph V., to NCR Corporation. Rotational shaft coupling apparatus with adjustable coupling ratio and positive displacement. 3,861,511, Cl. 197-16.000.
Nelson, Jim S.: *See—*
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Neuffer, Bruce H., to Brown Engineering Company, Inc. Fuel pressurization for momentum compression ramjet engine. 3,861,141, Cl. 60-267.000.
Neustadt, Hans. Message transmission system with pulse compression. 3,862,371, Cl. 179-15.0AC.
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Nippon Acchakutanahi Seizo Kabushiki Kaisha: *See—*
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Nishida, Humihiko; and Furutaka, Takeo, to Dainippon Screen Seiza Kabushiki-Kaisha; and Dainippon Insatsu Kabushiki-Kaisha. Apparatus for obtaining copies expanded or constracted in one direction. 3,861,797, Cl. 355-52.000.
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Noda, Tomimitsu, to Tokyo Shibaura Electric Co., Ltd. Microwave oven apparatus for varying intensity of heating waves. 3,862,390, Cl. 219-10.550.
Noguchi, Masaru; Nishimura, Seikichi; Kuwahara, Tatsuo; and Minemura, Katsuya, to Nippon Telegraph and Telephone Public Corp.; and Riken Koki Co., Ltd. Gas purifying apparatus. 3,861,891, Cl. 55-230.000.
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North, Howard C.; Sherman, Harry W.; and Kaplan, Edward B., to Exxon Research and Engineering Company. Production of thermoplastic sheet. 3,862,285, Cl. 264-89.000.
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Nutter, Charles E.: *See—*
Stapleford, Stuart H.; and Nutter, Charles E., 3,861,971.
Nyeki, Olga: *See—*
Low, Miklos; Kisfaludy, Lajos; Patthy, Agnes; Szirmai, Maria; Nyeki, Olga; Szporny, Laszlo; and Hajos, Gyorgy, 3,862,111.
Oakes, Andrew A.: *See—*
Entwistle, Claude Joseph; and Oakes, Andrew A., 3,861,560.
Obayashi, Hidehito: *See—*
Kudo, Tetsuichi; Yoshida, Motoko; Obayashi, Hidehito; and Gejyo, Tetsuo, 3,861,961.

Ochiai, Koichiro; and Takahashi, Makoto, to Bridgestone Tire Company Limited. Semi-radial tire having breakers disposed between adjacent carcass plies. 3,861,440, Cl. 152-361.00R.

O'Dell, Charles E.: *See—*
Dale, William L.; Britsch, William G.; and O'Dell, Charles E., 3,861,092.

Oellig, Rudi: *See—*
Jellinek, Karl; Post Udo; and Oellig, Rudi, 3,862,093.

Ogirima, Masahiko: *See—*
Ono, Yuichi; Kurata, Kazuhiro; Ogirima, Masahiko; and Shinoda, Toshimitu, 3,861,969.

Oglesbee, John W.; Krawczak, Gale F.; and Leadbetter, Laurence D., to Bendix Corporation, The. Adaptive braking system. 3,861,758, Cl. 303-21.00P.

Oglesbee, John W.: *See—*
McNamara, Mary T.; Davis, Dennis J.; Oglesbee, John W.; Krawczak, Gale F.; and McKinnon, Donald J., 3,861,759.

Ogura, Takashi: *See—*
Okuyama, Takashi; Yoshida, Keiichi; Sakurai, Katukiyo; Ogura, Takashi; Horie, Katuyuki; Tawada, Akira; and Hara, Tadashi, 3,862,003.

Oguri, Yoshitaka: *See—*
Ishida, Masahiko; Oguri, Yoshitaka; Muroi, Tadashi; and Shimizu, Norio, 3,862,112.

Ohmori, Muneki: *See—*
Isowa, Yoshikazu; Takashima, Toshiyuki; Ohmori, Muneki; Kurita, Mideaki; Sato, Masanari; and Mori, Kaoru, 3,862,110.

Ohnemuller, Walter; and Solf, Alexander. A synthetic crystalline beta-wallastonite product. 3,861,935, Cl. 106-306.000.

Ohno, Nobuo: *See—*
Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, 3,862,174.

Okamoto, Mamoru: *See—*
Suzuki, Takamitsu; Takahashi, Akio; Oya, Shunichi; and Okamoto, Mamoru, 3,861,192.

Okawara, Yasuo: *See—*
Mizutani, Nagao; Nojima, Masamitsu; and Okawara, Yasuo, 3,861,302.

Oki Electric Industry Co., Ltd.: *See—*
Sasaki, Rentaro, 3,861,305.

Okrent, Eugene H.; and Tarmy, Barry L., to Exxon Research and Engineering Company. Method of operating a neutronic reactor. 3,861,998, Cl. 176-37.000.

Okubo, Masanobu, to Fujitsu Ten Ltd. Vehicle safety system. 3,861,710, Cl. 280-150.0AB.

Okubo, Takashi: *See—*
Murayama, Masao; Seto, Eisuke; Enomoto, Hiroshi; Okubo, Takashi; Nomiyana, Yoshitsugu; and Saito, Katsuhide, 3,862,210.

Okudaira, Mitsuo, to Nippon Gakki Seizo Kabushiki Kaisha. Variable time constant circuit for use in an electronic musical instrument. 3,861,263, Cl. 84-1.110.

Okuno, Yositosi: *See—*
Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, 3,862,174.

Okuyama, Takashi; Yoshida, Keiichi; Sakurai, Katukiyo; Ogura, Takashi; Horie, Katuyuki; Tawada, Akira; and Hara, Tadashi, to Siekagaku Kogyo Co., Ltd. Method of separating and recovering mucopolysaccharides from connective tissues of animals. 3,862,003, Cl. 195-7.000.

Olah, Louis: *See—*
Currell, Richard W.; Olah, Louis; and Vogel, Charles A., 3,862,289.

Oleski, Frank J.: *See—*
Stephens, W. J.; and Oleski, Frank J., 3,861,482.

Olin Corporation: *See—*
Knowles, Thomas A.; and Scott, Robert N., 3,862,237.
Norris, Paul R.; Van Haltern, Frank, Jr.; and Walz, David K., 3,861,572.
Popplewell, James M.; and Butt, Sheldon H., 3,861,884.

Olson, Ronald Arthur; and Luten, Gerrit, to Tektronix, Inc. Television picture monitor capable of measuring a plurality of signals. 3,862,356, Cl. 178-6.800.

Omark Australia, Ltd.: *See—*
Diener, Leslie J., 3,861,636.

Ono, Soshiro: *See—*
Mizutani, Tadashi; and Ono, Soshiro, 3,861,424.

Ono, Yuichi; Kurata, Kazuhiro; Ogirima, Masahiko; and Shinoda, Toshimitu, to Hitachi, Ltd. Method for making iii–v compound semiconductor devices. 3,861,969, Cl. 148-187.000.

Onozuka, Mitsuo; Hayashi, Yasuo; and Adachi, Yoshiaki, to Kureha Kagaku Kogyo Kabushiki Kaisha. Article having applied to the surface thereof, an anti-fouling composition comprising a polymer and an organo-tin compound. 3,861,949, Cl. 117-138.500.

Onta, Noriyuki: *See—*
Murayama, Keisuke; Toda, Toshimasa; Mori, Eika; Matsui, Katsuaki; Kurumada, Tomoyuki; Onta, Noriyuki; and Watanabe, Ichiro, 3,862,155.

Ooe, Tsutomu: *See—*
Uto, Yoshimitsu; Iwasaki, Yasuhiro; Yamamoto, Yoshihiro; Ooe, Tsutomu; and Nakayama, Ryohei, 3,861,883.

Oosterling, Pieter Adriaan; and Hooftman, Johannes Philippus, to H. Vissers N.V. Spreading device comprising a reciprocatory swinging distribution pipe. 3,861,600, Cl. 239-689.000.

Ophthalmic Sciences, Inc.: *See—*
Stoddard, Darrell D., 3,862,261.

Optical Standards Company, Incorporated: *See—*
Thompson, Kenneth B., 3,861,048.

Optotechnik Heine KG: *See—*
Heine, Helmut A., 3,861,789.

Orchard, Melvin C., to Cornaby, K. S. Apparatus for steaming wearing apparel. 3,861,179, Cl. 68-6.000.

Orelup, Richard B., to Morton-Norwich Products, Inc. Disazo dyes resistant to adsorption. 3,862,120, Cl. 260-191.000.

Ortho Pharmaceutical Corporation: *See—*
Hirsch, Allen F., 3,862,193.
Karmas, George, 3,862,239.

Osborn, Garland W., Jr., to United States of America, Army. Silo closure actuation. 3,861,271, Cl. 89-1.800.

Osborn, Merritt A.: *See—*
Adams, Otis J.; Dodson, Osborne C.; and Osborn, Merritt A., 3,861,242.

Osborne, Jaime Melgarejo. Feed composition. 3,862,337, Cl. 426-2.000.

Ostrander, George K.; and Wixson, Donald F., to Air Preheater Company, Inc., The. Multi-head infra-red ray detector. 3,861,458, Cl. 165-5.000.

O'Sullivan, Thomas Denis, to Bell Telephone Laboratories, Incorporated. Lead-acid battery with resealable vent valve. 3,861,965, Cl. 136-178.000.

Othmer, Donald F. Method for producing aluminum metal directly from ore. 3,861,904, Cl. 75-68.00R.

Otis Elevator Company: *See—*
Lusti, John; and Krzyzanowski, Sergius Paul, 3,862,388.

Otsap, Ben A.: *See—*
Boyadjieff, George I.; and Otsap, Ben A., 3,861,464.

Ott, Hans; and Suess, Rudolf, to Sandoz Ltd., (a/k/a Sandoz AG). CIS-6-(ACYLAMINOPHENYL)-8,9-DIMETHOXY-2-METHYL-1,2,3,4,4a, 10b-HEXAHYDRO-BENZO [C]-[1,6] NAPHTHYRIDINE. 3,862,153, Cl. 260-287.00R.

Otte, Richard F.; and Vidakovits, Lajos J., to Raychem Corporation. Article and method for locating contacts. 3,861,030, Cl. 29-626.000.

Ottenheym, Johannes H.: *See—*
Eurlings, Jacobus J. M. G.; Geus, John W.; and Ottenheym, Johannes H., 3,862,055.

Ouhl, Kenneth R. Tray for oven-firing porcelain dental bridges and like dental appliances. 3,861,867, Cl. 432-258.000.

Ousterling, David L.: *See—*
Taylor, John R.; Jones, Harold F.; and Ousterling, David L., 3,861,550.

Ouwerkerk, Johannes H. W., to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V. Quenching tower for quenching coke and similar materials, and a quenching device as part of such a tower. 3,862,015, Cl. 202-227.000.

Owen, Charles R. Universal vending means for packaged materials in a vending device. 3,861,562, Cl. 221-85.000.

Owens-Corning Fiberglas Corporation: *See—*
Clark, Vincent De Paul, 3,861,425.
Klink, Jerome P.; Symborski, Alex P.; and Shape, Norman R., 3,861,609.
Poulsen, Peder Ulrik, 3,861,984.
Stapleford, Stuart H.; and Nutter, Charles E., 3,861,971.
Wilson, Edward L.; McCluskey, John J.; Bell, Ronald Z.; Linak, Richard T.; and Armstrong, Gordon P., 3,861,982.
Wolf, Warren W., 3,861,925.

Owens-Illinois, Inc.: *See—*
Mullinax, Harold L., Sr., 3,861,256.

Oya, Shunichi: *See—*
Suzuki, Takamitsu; Takahashi, Akio; Oya, Shunichi; and Okamoto, Mamoru, 3,861,192.

Oyoun, Sami, to Uniroyal A.G. Pneumatic tire breaker assembly. 3,861,441, Cl. 152-361.00R.

Packaging Corporation of America: *See—*
Manis, Charles A.; and Wood, Charles E., 3,861,579.

Pagano, Joseph F., to SmithKline Corporation. Device for making a culture of micro-organisms. 3,862,013, Cl. 195-139.000.

Page, William R.: *See—*
Hings, Donald Paul, 3,861,558.

Palar (Curacao) N.V.: *See—*
Ernst, Urs; and Meier, Beda, 3,861,270.

Pallos, Ferenc M., to Stauffer Chemical Company. Formamidine compounds containing trihalomethyl groups. 3,862,229, Cl. 260-564.0RF.

Palmeri, Joseph J.: *See—*
Witcraft, Richard L.; and Palmeri, Joseph J., 3,861,253.

Pals, Robert. Hog sorter gate device. 3,861,359, Cl. 119-155.000.

Panaia, Robert L.: *See—*
Charles, Wesley N.; Panaia, Robert L.; and Hunter, Bruce H., 3,861,038.

Panovici, Alexandru: *See—*
Csomontanyi, Georgeta; Mocearov, Vladimir; Panovici, Alexandru; and Biceaga, Viorel, 3,862,207.

Papayoti, Hristo V., to Unistrut Corporation. Connecting fixture assembly for space frame system. 3,861,107, Cl. 52-650.000.

Pape, Hermann, to Gardisette Holding AG. Device for fixing folds in curtains and drapes. 3,861,001, Cl. 24-81.0DS.

Parish, Roger C.: *See—*
Chalupa, William V.; Chow, Alfred W.; and Parish, Roger C., 3,862,333.

Parker, Duane H.: *See—*
Kugele, Thomas G.; and Parker, Duane H., 3,862,198.

Parker, Robert, to Robert Parker Research, Inc. Digital thermometer and method of manufacture. 3,861,213, Cl. 73-356.000.

Parker, Ronald S.; and Reilly, Ronald, to Union Carbide Iran S.A. Method of producing a dry cell having thin film seal. 3,861,960, Cl. 136-107.000.

Parker, William Lawrence; and Meyers, Edward, to E. R. Squibb & Sons, Inc. Tetraamidino derivatives of antibiotic em-49. 3,862,315, Cl. 424-118.000.

Parlagreco, Thomas J. Bandage storage and dispensing container. 3,861,985, Cl. 156-517.000.

Patel, Purushottam Manilal: *See—*
Lenhart, James Herbert Fuller; and Patel, Purushottam Manilal, 3,862,430.

Patterson, Earl Byron, to University of Illinois Foundation. Procedures for use of genic male sterility in production of commercial hybrid maize. 3,861,079, Cl. 47-58.000.

Patterson, Merle W.; and Caves, Lawrence C., Jr. Earth anchor. 3,861,097, Cl. 52-98.000.

Patthy, Agnes: *See—*
Low, Miklos; Kisfaludy, Lajos; Patthy, Agnes; Szirmai, Maria; Nyeki, Olga; Szporny, Laszlo; and Hajos, Gyorgy, 3,862,111.

Patzer, Helmut Karl, to Borg-Warner-Stieber GmbH. Collet and adjusting screw therefor. 3,861,692, Cl. 279-2.00R.

Paul, Richard. Disconnectable training device for sports such as jujitsu, judo, or karate. 3,861,676, Cl. 272-76.000.

Pavelka, Clement C. Tractor having a full swivel front section. 3,861,483, Cl. 180-19.00S.

Payne, Harold James William, to H. H. Robertson Company. Acoustically absorbent sheet metal structural building units. 3,861,493, Cl. 181-33.00G.

Peabody, Bayard W.; and Cericola, Robert F., to General Electric Company. Diaphragm support lugs. 3,861,827, Cl. 415-219.000.

Pearse, Richard Vyvian: *See—*
Claridge, Maurice Arthur; and Pearse, Richard Vyvian, 3,862,297.

Pearson, John R., to Poe, Floyd S. Sound reproducing device. 3,861,495, Cl. 181-163.000.

Peck, Allan E.: *See—*
Harris, Raleigh J.; and Peck, Allan E., 3,861,386.

Pellecchia, Daniel. Hair dressing device. 3,861,405, Cl. 132-9.000.

Pelzel, Erich. Zinc-aluminum alloy and method of making same. 3,861,967, Cl. 148-11.50R.

Peniston, Quintin P.; and Johnson, Edwin Lee. Method of recovering chitosan and other by-products from shellfish waste and the like. 3,862,122, Cl. 260-211.00R.

Penn Controls Inc.: *See—*
Wagner, Leland Burns; and Cripe, Russell, 3,861,277.

Pennwalt Corporation: *See—*
MacLeay, Ronald Edward, 3,862,107.

Pepro Societe Pour le Developpment et la Vente de Specialites Chemiques: *See—*
Poignant, Pierre; and Rognon, Jacques, 3,861,902.

Peres, Anthony R., to Press Electronic Machines, Inc. Box flapper. 3,861,115, Cl. 53-76.000.

Perfect Seal Window Inc.: *See—*
Dau, Matthew L., 3,861,082.

Perkin-Elmer Corporation, The: *See—*
Hall, Joseph F., Jr., 3,861,809.
Peters, William N.; and Schlesinger, Eugene R., 3,861,801.

Perkins, Charles H., to Robertshaw Controls Company. Gimbal mounting means and method. 3,861,763, Cl. 308-2.00R.

Perkins, Garry R., to Spotnails, Inc. A package of collated fasteners. 3,861,527, Cl. 206-344.000.

Perkins, Paul Raymond; and Bale, Christopher Ralph, to Imperial Tobacco Group Limited. Nicotine fortification of smoking products. 3,861,400, Cl. 131-2.000.

Perklev, Torsten Rune: *See—*
Hogberg, Knut Bertil; Fex, Hans Jacob; Fredholm, Bo Goran; Perklev, Torsten Rune; and Veige, Sten Gunner, 3,862,270.

Permali Incorporated: *See—*
Clark, Robert M., 3,861,777.

Perrine, Walter E. Adjustable hesitation blow back operated gun lever mechanism. 3,861,274, Cl. 89-180.000.

Persson, Leonard Per Anders. Apparatus for outdoor lighting, especially for traffic signs. 3,862,411, Cl. 240-25.000.

Peshkova, Nina Prokopievna: *See—*
Isailingold, Anatoly Lvovich; Levin, Veniamin Anatolievich; Pilipenko, Fedor Semenovich; Vernova, Tatyana Pavlovna; Stepanov, Gennady Arkadievich; Bushin, Alexandr Nikitich; Sirotkin, Boris Vasilievich; Kozin, Valentin Vasilievich; Basner, Mark Ekhetskelevich; Erofeeva, Aida Vladimirovna; Peshkova, Nina Prokopievna; Tuktarova, Luiza Saidovna; Kirnos, Yakov Yakovlevich; Mikhailov, Ruslan Konstantinovich; Dolinin, Nikolai Zakharovich; Rastvorov, Jury Nikolaevich; and Eratova, Valeria Lvovna, 3,862,256.

Peters, Thomas E.: *See—*
Dotson, James M.; and Peters, Thomas E., 3,862,296.

Peters, William N.; and Schlesinger, Eugene R., to Perkin-Elmer Corporation, The. Device for sampling laser beams. 3,861,801, Cl. 356-74.000.

Petersen, Harro; Bille, Heinz; and Reuss, Guenter. Production of textile finishes. 3,862,224, Cl. 260-555.00R.

Petersen, Jimmy: *See—*
McCullough, Edward E.; and Petersen, Jimmy, 3,862,359.

Peterson, William Donald, II. Bi-directional flow stop valve. 3,861,414, Cl. 137-512.300.

Petro-Tex Chemical Corporation: *See—*
Cooley, Stone D.; and Schwartz, Andrew K., Jr., 3,862,147.

Petrocci, Alfonso N.: *See—*
Adams, Phillip; and Petrocci, Alfonso N., 3,862,318.

Petrow, Henry G., to Prototech Company. Method of reducing carbon monoxide formation in catalytic heaters and burners and improved catalytic structure for use therewith. 3,861,853, Cl. 431-7.000.

Petruzzi, Daniel J. Pizza sauce spreader. 3,860,990, Cl. 15-104.00S.

Petterson, DeWitt R.: *See—*
Glover, George M.; Nimoy, Melvin; Petterson, DeWitt R.; and Volk, Albert J., 3,861,972.

Pettit, Paul H., Jr., to du Pont de Nemours, E. I., and Company. Thermosetting acrylic powder of an acrylic polymer having a high glass transition temperature, cellulose acetate butyrate, a reactive plasticizer and a cross-linking agent. 3,862,063, Cl. 260-15.000.

Pfeifer, Louis F. J., to Heyman Manufacturing Company. Polarized electric contact blade. 3,861,779, Cl. 339-184.00M.

Pfizer Inc.: *See—*
Conover, Lloyd H.; and Woodward, Robert B., 3,862,225.
El-Haj, Marwan J. Abu; and Dominy, Beryl William, 3,362,191.
Lipinski, Christopher Andrew, 3,862,190.
Lombardino, Joseph G.; and Wiseman, Edward A., 3,862,319.

Pharn Yarns, Incorporated: *See—*
McWhirter, Joe R.; and Shepherd, Donald O., 3,861,176.

Philipp, Herbert R.; and Levinson, Lionel M., to General Electric Company. Method of operation of photoconductive varistor. 3,862,422, Cl. 250-338.000.

Phillips, James W.; and Zoludow, Richard S., to Dwyer Instruments, Inc. Miniaturized differential pressure switch with integral contact and spring mounted on diaphragm. 3,862,387, Cl. 200-83.00N.

Phillips, James W.; and Zoludow, Richard S., to Dwyer Instruments, Inc. Pressure indicator and switch. 3,862,416, Cl. 250-231.00P.

Phillips Petroleum Company: *See—*
Bertus, Brent J.; and Walker, Darrell W., 3,862,255.
Butcher, Alvin E., 3,861,845.
Campbell, Robert W.; and Moberly, Charles W., 3,862,095.
Harrell, Melvin R., 3,861,983.
Larsen, Olaf E., 3,861,415.
Moberly, Charles W., 3,862,274.
Thomas, William E., 3,861,842.
Witt, Donald R., 3,862,104.

Phillips, William Sidney: *See—*
Standen, Colin John Smeed; and Phillips, William Sidney, 3,862,080.

Picker Corporation: *See—*
Coleman, Eugene W., 3,861,529.

Pieroh, Ernst Albrecht: *See—*
Ahrens, Dietrich; Roder, Kurt; and Pieroh, Ernst Albrecht, 3,862,126.

Pifferi, Giorgio, to I.S.F.S.P.A. Heterocyclic thioamides of 4-substituted syringic acid and their preparation. 3,862,138, Cl. 260-243.00B.

Pilipenko, Fedor Semenovich: *See—*
Isailingold, Anatoly Lvovich; Levin, Veniamin Anatolievich; Pilipenko, Fedor Semenovich; Vernova, Tatyana Pavlovna; Stepanov, Gennady Arkadievich; Bushin, Alexandr Nikitich; Sirotkin, Boris Vasilievich; Kozin, Valentin Vasilievich; Basner, Mark Ekhetskelevich; Erofeeva, Aida Vladimirovna; Peshkova, Nina Prokopievna; Tuktarova, Luiza Saidovna; Kirnos, Yakov Yakovlevich; Mikhailov, Ruslan Konstantinovich; Dolinin, Nikolai Zakharovich; Rastvorov, Jury Nikolaevich; and Eratova, Valeria Lvovna, 3,862,256.

Pilkington Brothers Limited: *See—*
Irlam, Phillip Sidney; and Yale, Brian, 3,861,926.

Pillsbury Company, The: *See—*
Westover, Jack D.; and Kiploks, Elmars M., 3,862,345.

Pina, Florentino P., to Raymond Lee Organization, Inc., The, a part interest. Boat docking tool. 3,861,346, Cl. 114-230.000.

Pinson, Claude M., to Societe Anonyme Poclain. Pump power governor. 3,861,832, Cl. 417-212.000.

Pioneer Electronic Corporation: *See—*
Sato, Takashi, 3,862,368.

Piper, John Charles, to Combustion Engineering, Inc. Adjustable gripper apparatus. 3,861,732, Cl. 294-65.000.

Pitney-Bowes, Inc.: *See—*
DuBois, Robert Clark; Pollak, Philip, Jr.; and Ross, William A., 3,861,306.
Zucker, Fredric E.; Storace, Anthony; and Sette, Paul R., 3,861,480.

Pittet, Alan O.: *See—*
Schreiber, William Lewis; Mosciano, Gerard Joseph; Pittet, Alan O.; Vock, Manfred; and Shuster, Edward Joseph, 3,862,340.

Pittet, Alan Owen: *See—*
Vinals, Joaquin Francisco; Quinn, Alton Dewitt; and Pittet, Alan Owen, 3,861,403.

Pittsburgh-Des Moines Steel Company: *See—*
Adams, John H., 3,861,552.

Plastofilm Industries, Inc.: *See—*
Schier, Jacques; and Graves, Robert W. (said Graves assors. to), 3,861,433.

Playart Ltd.: *See—*
Tong, Duncan, 3,861,638.

Pless, Ernst, to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H. Headphone construction for interpreter translator arrangements. 3,862,379, Cl. 179-167.000.

Plowman, Richard Edward, to Imperial Chemical Industries Limited. Method of combating plant fungi. 3,862,325, Cl. 424-283.000.

Plueddemann, Edwin P., to Dow Corning Corporation. Modified zwitterion resins. 3,862,079, Cl. 260-29.7SQ.

Podesva, Ctirad; Scott, William T.; and Navratil, Milada M., to Delmar Chemicals Limited. Heterocyclic benzamide compounds. 3,862,139, Cl. 260-326.470.

Podesva, Ctirad; and Solomon, Carola, to Delmar Chemicals Limited. Diphenylpropyl-substituted 1-amino adamantanes. 3,862,231, Cl. 260-570.00R.

Poe, Floyd S.: *See—*
Pearson, John R., 3,861,495.

Poellot, E. Roe, Jr.: *See—*
Hilgeman, Clarence B.; and Poellot, E. Roe, Jr., 3,862,446.

Poignant, Pierre; and Rognon, Jacques, to Pepro Societe Pour le Developpment et la Vente de Specialites Chemiques. New herbicidal compositions for post-emergence weed control among cereal crops. 3,861,902, Cl. 71-108.000.

Polaroid Corporation: *See—*
Borror, Alan L.; Hill, Ruth Linda; and Reid, Jerome L., 3,861,920.
Burke, Edward F., Jr.; and Czumak, Frank M., 3,861,791.
Fitzgerald, Maurice J., 3,861,918.
Greenwald, Richard B., 3,862,128.

Polestak, Walter J.: *See—*
Keuchel, Herbert W.; and Polestak, Walter J., 3,861,843.

Politz, William E., to Young, Stephen A. Offset trip lever fitting. 3,860,977, Cl. 4-199.000.

Pollak, Philip, Jr.: *See—*
DuBois, Robert Clark; Pollak, Philip, Jr.; and Ross, William A., 3,861,306.

Polleys, Herbert R., to Wellman Company. Coupling device for a c ting machine. 3,861,006, Cl. 24-232.000.

Polovina, Walter, to AB Carl Munters. Apparatus for gas-liquid contact. 3,862,280, Cl. 261-112.000.

Poole, John W.: *See—*
Dundas, Peter H.; Poole, John W.; and Vogel, Charles E., 3,862,393.

Popdan, Gary L.: *See—*
Freedy, Allan L.; Muller, Thomas P.; and Popdan, Gary L., 3,861,762.

Popplewell, James M.; and Butt, Sheldon H., to Olin Corporation. Composite metal article. 3,861,884, Cl. 29-199.000.

Poque, Dionysius Josef, to Uniroyal A.G. Pneumatic tire tread. 3,861,436, Cl. 152-209.00R.

Porter, Ronald H.: *See—*
Runyan, Kenneth R.; Honnert, Quentin E.; and Porter, Ronald H., 3,861,515.

Portwood, Jerry E., to Crane Plastics, Inc. Extruded plastic window frame. 3,861,444, Cl. 160-90.000.

Post Udo: *See—*
Jellinek, Karl; Post Udo; and Oellig, Rudi, 3,862,093.

Postans, John Henry, to Joseph Lucas (Electrical) Limited. Lamp reflectors. 3,862,412, Cl. 240-103.00R.

Poulsen, Peder Ulrik, to Owens-Corning Fiberglas Corporation. Mandrel for the production of reinforced plastic tubing. 3,861,984, Cl. 156-425.000.

Pourrias, Bernard M.: *See—*
Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; and Pourrias, Bernard M., 3,862,176.

Power Conversion, Inc.: *See—*
Michalko, Ignatius, 3,861,964.

PPG Industries, Inc.: *See—*
Hartzell, Rowland S.; and Hahn, Ernest A., 3,861,945.
Johnson, Harlan B., 3,862,023.

Preisler, Samuel L. Pressure sensitive rolled sheeting applicator and dispenser. 3,861,988, Cl. 156-577.000.

Preiss, Kenneth. Apparatus and method for using the same to ascertain the angular position of a discontinuity in the medium surrounding a test bore. 3,862,418, Cl. 250-267.000.

Preist, Donald H.: *See—*
Stuart, William R.; and Preist, Donald H., 3,862,449.

Press Electronic Machines, Inc.: *See—*
Peres, Anthony R., 3,861,115.

Preston, David M.: *See—*
Leonard, William A.; Preston, David M.; and Smith, Thomas W., 3,861,742.

Preston Engravers, Inc.: *See—*
Kesten, Martin; and Edwards, Richard L., 3,861,260.

Preus, Paul; and Gallagher, John J. Separator for liquids of different densities. 3,862,040, Cl. 210-253.000.

Price, Richard Thompson; Bauer, Stuart Michael; Brownlee, John; and Goverde, Bastiaan Cornelis, to Akzona Incorporated. Pelletized pregnancy test reagents. 3,862,302, Cl. 424-12.000.

Prikhodko, Valery Alexandrovich: *See—*
Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Prikhodko, Valery Alexandrovich; and Kumysh, Ilya Iosifovich, 3,861,448.

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Di Giulio, David Neil, 3,862,307.
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Prohaszka, Janos; Mandoki, Andor; and Welesz, Rudolf, to Licencia Talalmanyokat Ertekesito Vallalat. Mobile metal melt contact system for the transmission of annealing currents. 3,861,658, Cl. 266-3.00R.

Propper Manufacturing Company, Inc.: *See—*
Heine, Helmut A., 3,861,789.

Prototech Company: *See—*
Petrow, Henry G., 3,861,853.

Providence Pile Fabric Corp.: *See—*
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Pryor, Edward G., to Reliance Electric Company. Tare entry circuitry for a computing scale. 3,861,479, Cl. 177-25.000.

Przewalski, Zygmunt J., to Progressive Trade Corporation. Incineration system. 3,861,335, Cl. 110-14.000.

Pugh, Ralph A.; Sofer, George A.; and Leach, Charles E., to Exxon Nuclear Company, Inc. Coolant mixing vanes. 3,862,000, Cl. 176-78.000.

Pullman Incorporated: *See—*
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Purrmann, Robert: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf Dieter, 3,862,308.

Quasius, Alan R., to Gillette Company, The. Cosmetic compositions containing formylated polyethylene polyamine. 3,862,310, Cl. 424-70.000.

Quate, Calvin F.; and Ludvik, Stephen, to Leland Stanford Junior University, The Board of Trustees of. Signal processing apparatus. 3,862,431, Cl. 307-88.300.

Quepar S.A.: *See—*
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Quinn, Alton Dewitt: *See—*
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R. G. Dixon & Company Limited: *See—*
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R. O. Hull & Company, Inc.: *See—*
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R. P. Scherer Limited: *See—*
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Rabenecker, Horst; and Kredel, Harald, to Dragerwerk Aktiengesellschaft. Gas detection device. 3,861,217, Cl. 73-421.50R.

Rabenecker, Horst: *See—*
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Radei, Ruth: *See—*
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Radutsky, Grigory Avramovich: *See—*
Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Frumkin, Mikhail Evseevich; and Mirchevsky, Petr Nikolaevich, 3,861,537.

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Ramage, Jerrie K., to Bendix Corporation, The. Positive lock force ratio changer. 3,861,236, Cl. 74-512.000.

Ramey, Woodrow W.; and Howland, Walter L. Conduit and cable cutter attachment for explosive actuated devices. 3,861,035, Cl. 30-92.000.

Rao, Raghavendra; and Richter, Gerhard, to Siemens Aktiengesellschaft. Implantable fuel cell. 3,861,397, Cl. 128-419.00B.

Rapid Technological Devices, Inc.: *See—*
Hrabovsky, Joseph V., 3,862,384.

Rapoza, Edward J.; and Watson, Keith, to Becton, Dickinson and Company. Particle counter independent of flow rate. 3,861,800, Cl. 356-39.000.

Rappleye, June A.: *See—*
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Rappleye, Ned E.; and Rappleye, June A. Grocery cart hook. 3,861,633, Cl. 248-227.000.

Rasmussen, Robert R. Partitioning arrangement for high rise buildings. 3,861,103, Cl. 52-241.000.

Rastvorov, Jury Nikolaevich: *See—*
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Smith-Johannsen, Robert; and Walker, Jack McLean, 3,861,029.
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Republic Steel Corporation: *See—*
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Research Corporation: *See—*
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Rhodes, William H., to United States of America, Air Force. Method for sintering a yttria stabilized zirconia body incorporating thorium oxide as a sintering aid. 3,862,283, Cl. 264-56.000.
Rhone-Poulenc S.A.: *See—*
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Richter Gedeon Vegyeszti Gyar RT.: *See—*
Low, Miklos; Kisfaludy, Lajos; Patthy, Agnes; Szirmai, Maria; Nyeki, Olga; Szporny, Laszlo; and Hajos, Gyorgy, 3,862,111.
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Ringo, Acey. Barbecuing apparatus. 3,861,290, Cl. 99-427.000.
Ringo, Joseph J. Collector-compactor for hair and the like. 3,861,730, Cl. 294-1.00R.
Riniker, Bernhard; Kamber, Bruno; and Sieber, Peter, to Ciba-Geigy Corporation. Process for the selective elimination of aralkyloxycarbonyl and trityl n-protecting groups with 2,2,2-trifluoroethanol. 3,862,113, Cl. 260-112.700.
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Robinson, Klas Robert William. Liquid suspension purifying unit. 3,862,041, Cl. 210-512.00M.
Robinson, Steven. Modular building construction. 3,861,093, Cl. 52-79.000.
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Rovetti, Melvin G. Method for drying and preserving plant material. 3,861,053. Cl. 34-9.000.
Rowe, Gerald W. Instrument console for underwater diving apparatus. 3,861,417, Cl. 137-557.000.
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Sakakibara, Naoji, to Aisin Seiki Kabushiki Kaisha. Constant speed control system of vehicle travel. 3,861,490, Cl. 180-108.000.
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Salters, Roelof Herman Willem; Boonstra, Lieuwe; and Lambrechtse, Cornelis Willem, to U.S. Philips Corporation. Digital shift register. 3,862,435, Cl. 307-221.00C.
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Samour, Carlos M.; and Richards, Mildred C. Pressure sensitive adhesive tape. 3,861,948, Cl. 117-122.0PF.
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Sato, Kazuo; and Takahashi, Soji, to Hitachi, Ltd. Method of manufacturing an article having a peripheral wall and integral thin-walled portions extending radially inwardly therefrom. 3,861,191, Cl. 72-267.000.
Sato, Masanari: *See*—
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Sato, Takashi, to Pioneer Electronic Corporation. Automatic telephone answering apparatus. 3,862,368, Cl. 179-6.00R.
Sato, Toshio; Katsumi, Mamoru; Tsuda, Natsuko; and Yoshida, Akira, to Kno Soap Co., Ltd. Antistatic softening composition. 3,862,045, Cl. 252-8.750.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Portable tagging machine. 3,861,280, Cl. 93-88.000.
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Scheidecker, Georges, to Societe Alsacienne De Constructions Mecaniques De Mulhouse. Carriers for weft insertion by the rapier principle with positive gripping for shuttleless looms. 3,861,427, Cl. 139-122.00N.
Scheithauer, William, Jr., to GTE Sylvania Incorporated. Densification of alloys. 3,861,966, Cl. 148-11.50F.
Schenk, Peter, to Dzus Fastener Co., Inc. Flush head panel fastener. 3,861,004, Cl. 24-204.000.
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Schiemann, Wolfram. Apparatus for moulding the neck of an extruded hollow body. 3,861,851, Cl. 425-503.000.
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Schmitt, Donald J., to Therm-O-Disc Incorporated. Method of manufacturing and testing thermal fuses. 3,861,032, Cl. 29-623.000.
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Schoffl, Rainer, to Dynamit Nobel Aktiengesellschaft. Foldable control flap unit, especially for rockets. 3,861,627, Cl. 244-3.270.
Schora, Frank C., to Institute of Gas Technology. Carbon black fuel production. 3,861,885, Cl. 44-1.00R.
Schrader, Gerhard; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-alkyl-s-(carbamoyloxy-methyl)-(thiono) thiolphosphoric (phosphonic) acid esters. 3,862,268, Cl. 260-938.000.
Schrader, Gerhard; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-alkyl-(thiono) thiol-s-(s-alkylmercapto-s-benzylmercaptomethyl)-phosphoric (phosphonic) acid esters. 3,862,271, Cl. 260-948.000.
Schrader, Gerhard; Hammann, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. O-alkyl-s-(2,3-dichloroallyl) -(thiono)thiol-phosphonic-acid esters. 3,862,272, Cl. 260-956.000.
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Schwindt, Wolfgang; Wolf, Dieter; Bachs, Karl; and Mueller, Richard. Printing textiles with acrylic acid copolymer paste. 3,861,869, Cl. 8-62.000.
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Sekmakas, Kazys, to DeSoto, Inc. Aqeous polymerization of unsaturated monomers utilizing trihydric or tetrahydric alcohols to produce emulsifier-free dispersions. 3,862,075, Cl. 260-29.60E.
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Sims, Royal W. Chain tensioning device. 3,861,657, Cl. 259-177.00R.

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Skinner, Herb W. Protective keyhole cover. 3,861,182, Cl. 70-455.000.

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Slamicarbon B.V.: *See—*
Eurlings, Jacobus J. M. G.; Geus, John W.; and Ottenheym, Johannes H., 3,862,055.

Slater, Thomas C., deceased (Slater, Vivian, Executrix); and Hamilton, Floyd C., Jr., to Flintkote Company, The. Hydraulic cement and method of producing same. 3,861,928, Cl. 106-89.000.

Slater, Vivian, Executrix: *See—*
Slater, Thomas C., deceased; and Hamilton, Floyd C., Jr., 3,861,928.

Slominski, Walter V.: *See—*
Terry, Samuel M.; and Slominski, Walter V., 3,861,711.

Smalling, Charles E. Convection heater for fluids. 3,861,856, Cl. 431-80.000.

Smirnoff, Vladimir A., to Canadian Patents and Development Limited. Extraction of chitinase. 3,862,007, Cl. 195-66.00R.

Smith, Allen E.: *See—*
Covey, Rupert A.; Smith, Allen E.; and Hubbard, Winchester L., 3,862,327.

Smith, David A.: *See—*
Gayner, Herbert; and Smith, David A., 3,861,976.

Smith, Donald W.; and Prill, Fredric W., to Barber-Greene Company. Filter device with scavenger system. 3,861,893, Cl. 55-302.000.

Smith, Glen H.; and Spence, Clarence W., to Lockheed Aircraft Corporation. Nibbling tool. 3,861,037, Cl. 30-228.000.

Smith-Johannsen, Robert; and Walker, Jack McLean, to Raychem Corporation. Method of making heater cable. 3,861,029, Cl. 29-611.000.

Smith, Leward N., to Morbark Industries, Inc. Brush chipper. 3,861,602, Cl. 241-92.000.

Smith, Peter D.: *See—*
Kletecka, George; and Smith, Peter D., 3,862,130.

Smith, Robert E. Method for quantitatively determining enzyme concentrations in homogenates. 3,862,011, Cl. 195-103.50R.

Smith, Thomas W.: *See—*
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SmithKline Corporation: *See—*
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Kaiser, Carl; and Ross, Stephen T., 3,862,222.
Pagano, Joseph F., 3,862,013.

Snyder, Ruth T. Convertible doll having mirror surface concealable by a face portion. 3,861,078, Cl. 46-153.000.

Sobotta, Reinhard, to Roller-Werke Franke & Heidecke. Magazine type slide projector with automatic focusing means. 3,861,794, Cl. 353-101.000.

Societa italiana S.p.A.: *See—*
Calcagno, Benedetto; Divo, Claudio; and Ghirga, Marcello, 3,862,216.

Societe Alsacienne De Constructions Mecaniques De Mulhouse: *See—*
Le Chatelier, Jacques, 3,861,131.
Scheidecker, Georges, 3,861,427.

Societe Anonyme De Telecommunications: *See—*
Bezerie, Jean Pierre, 3,862,421.

Societe Anonyme dite: L'Oreal: *See—*
Bouillon, Claude; Kalopissis, Gregoire; and Lang, Gerard, 3,862,305.
Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Guiliana; and de Beaulieu, Henri Philippe, 3,862,221.

Societe Anonyme dite: Messier: *See—*
Lucien, Rene, 3,861,276.

Societe Anonyme Francaise Theramex: *See—*
Gastaud, Jean Marie, 3,862,195.

Societe Anonyme Poclain: *See—*
Pinson, Claude M., 3,861,832.

Societe D'Etudes Scientifiques et Industrielles De L'Ile-De-France: *See—*
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Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM): *See—*
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Societe Generale De Recherches Et D'Applications Scientifiques "Sageras": *See—*
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Sofer, George A.: *See—*
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Sokol, Phillip Edward: *See—*
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Sokolskaya, Aida Mosieevna: *See—*
Sokolsky, Dmitry Vladimirovich; Zhubanov, Kair Akmetovich; Shumateva, Ninel Fedorovna; Mazin, Evgeny Petrovich; and Sokolskaya, Aida Mosieevna, 3,862,054.

Sokolsky, Dmitry Vladimirovich; Zhubanov, Kair Akmetovich; Shumateva, Ninel Fedorovna; Mazin, Evgeny Petrovich; and Sokolskaya, Aida Mosieevna. Adsorbent for purifying vegetable oils from phosphorus containing compounds. 3,862,054, Cl. 252-455.00R.

Sola Basic Industries Inc.: *See—*
Capra, Peter, 3,861,778.

Solf, Alexander: *See—*
Ohnemuller, Walter; and Solf, Alexander, 3,861,935.

Solomon, Carola: *See—*
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Kono, Osamu; Matsudaira, Takeshi; and Ishikawa, Makoto, 3,862,367.
Tokumoto, Shinichi; and Hayashi, Chisayo, 3,861,952.

Sorensen, Per Holst, to Frederikshavn Vaerfta & Tordoka A/S. Vessel with a well for cargo barges. 3,861,341, Cl. 114-43.500.

Spaeder, Carl E., Jr., to United States Steel Corporation. Composite roll and method of forming the same. 3,861,012, Cl. 29-129.500.

Spann, J. Richard: *See—*
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Spatenka, Karel: *See—*
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Spence, Clarence W.: *See—*
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Speraw, Floyd G.: *See—*
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Sperry Rand Corporation: *See—*
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Spiazzi, Ivo: *See—*
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Spiegelberg, Hans: *See—*
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Spies, Johann: *See—*
Held, Manfred; and Spies, Johann, 3,861,312.

Spinner, Georg. Device for the rotary axially fixed connection of two concentric components. 3,861,724, Cl. 285-415.000.

Spotnails, Inc.: *See—*
Perkins, Garry R., 3,861,527.

Squitieri, Vincent: *See—*
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Glaister, Frank Joseph; Squitieri, Vincent; and Lynn, William J., 3,862,382.

Srna, Christian: *See—*
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Stahl, Lothar, to Arn. Jung Lokomotivfabrik GmbH. Large-capacity transport ship. 3,861,342, Cl. 114-77.00R.

Stahl, Peter Heinrich, to Ciba-Geigy Corporation. Method of drying materials. 3,861,054, Cl. 34-10.000.

Stahl, Torvald: *See—*
Englesson, Bertil; Eriksson, Karl-Ingvar; Kallstrom, Willy; and Stahl, Torvald, 3,861,690.

Stahlecker, Fritz; and Stahlecker, Hans. Feed and opening apparatus, arranged in a stationary manner in a supporting member, of an open-end spinning unit. 3,861,132, Cl. 57-58.890.

Stahlecker, Hans: *See—*
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Stanadyne, Inc.: *See—*
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Standard Oil Company: *See—*
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Brennan, Harry M.; and Lamb, Douglas P., 3,862,145.

Standen, Colin John Smeed; and Phillips, William Sidney, to Catalin Limited. Foundry binder compositions. 3,862,080, Cl. 260-37.00N.

Stanek, Jaroslav: *See—*
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Staniland, Philip Anthony; and Jarrett, Graham, to Imperial Chemical Industries Limited. Cookware coated with aromatic polysulfones. 3,861,951, Cl. 117-161.00R.

Stanley, Charles Vincent, to International Telephone and Telegraph Corporation. Display apparatus. 3,862,362, Cl. 187-7.30D.

Stanley, Richard B. Linear actuator. 3,861,221, Cl. 74-25.000.

Stanley, Richard B. Linear actuator. 3,861,226, Cl. 74-89.150.

Stapleford, Stuart H.; and Nutter, Charles E., to Owens-Corning Fiberglas Corporation. Method of producing a board of fibrous glass and the product thereof. 3,861,971, Cl. 156-62.200.

Star Dental Manufacturing Co., Inc.: *See—*
Lieb, Nathaniel H.; and Wallace, Richard A., 3,861,043.

Stark, Sven O. S., to Tetra Pak Developpement SA. Packing laminate. 3,861,994, Cl. 161-161.000.

Starks, Charles V. Hangers for suspended ceiling structures. 3,861,105, Cl. 52-484.000.

Starr, Irving. Bubble maker. 3,861,076, Cl. 46-6.000.

Stasko, William: *See—*
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Stastny, Milos: *See—*
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Stauffer Chemical Company: *See—*
Greco, Carl C.; and Stamm, Walter, 3,862,203.
Pallos, Ferenc M., 3,862,229.
Shim, Kyung Sup, 3,862,275.

Stautzenberger, Adin L., to Celanese Corporation. Purification of terephthalic acid by thermal treatment. 3,862,218, Cl. 260-525.000.

Steele, Charles Sam, to Jefferson Chemical Company, Inc. Amine recovery. 3,862,234, Cl. 260-585.00A.

Steele, Clellie T.; Gaspar, Noel J.; and King, Laurence F., to Exxon Research and Engineering Company. Melt cracking for lubricating oils. 3,862,025, Cl. 208-109.000.

Steever, Andrew B.; and Jukkola, Walfred W. Fuel gun for fluidized bed reactor. 3,861,862, Cl. 432-58.000.

Stein, Samuel H., to Itek Corporation. A photoconductor process using a copy medium sensitized with an amine. 3,861,919, Cl. 96-48.000.

Stein, Werner: *See—*
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Steinberg, David H.: *See—*
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Steinberg, Meyer; Manowitz, Bernard; and Waide, Charles H., to United States of America, Atomic Energy Commission. Pumpable rockbolt method. 3,861,155, Cl. 61-45.00B.

Steinberg, Meyer; Kukacka, Lawrence E.; and Romano, Anthony J., to United States of America, Atomic Energy Commission. Method of making corrosion resistant concrete articles. 3,861,944, Cl. 117-72.000.

Steinkamp, Robert A.; and Grail, Thomas J., to Exxon Research and Engineering Company. Polymers with improved properties and process therefor. 3,862,265, Cl. 260-878.00R.

Steinmetz, Eberhard; and Kuhn, Jurgen, to Gesellschaft zur Forderung der Eisenhuttentechnix GmbH. Process for accelerating metallurgical reactions. 3,861,905, Cl. 75-93.00R.

Steinmetz, Ib; and Barmby, David S., to Sun Oil Company of Pennsylvania. Catalytic isomerization of lube streams and waxes. 3,861,005, Cl. 208-111.000.

Stelber Industries Inc.: *See—*
Cristie, Martin, 3,861,234.

Stepanov, Gennady Arkadievich: *See—*
Isailingold, Anatoly Lvovich; Levin, Veniamin Anatolievich; Pilipenko, Fedor Semenovich; Vernova, Tatyana Pavlovna; Stepanov, Gennady Arkadievich; Bushin, Alexandr Nikitich; Sirotkin, Boris Vasilievich; Kozin, Valentin Vasilievich; Basner, Mark Ekhetskelevich; Erofeeva, Aida Vladimirovna; Peshkova, Nina Prokopievna; Tuktarova, Luiza Saidovna; Kirnos, Yakov Yakovlevich; Mikhailov, Ruslan Konstantinovich; Dolinin, Nikolai Zakharovich; Rastvorov, Jury Nikolaevich; and Eratova, Valeria Lvovna, 3,862,256.

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Sterling Drug Inc.: *See—*
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Stingl, Hans Alfred, to Toms River Chemical Corporation. Lower alkyl ether-containing disazo dyes for nylon. 3,862,119, Cl. 260-186.000.

Stitt, Ralph E. Tooth cleaning device. 3,861,406, Cl. 132-92.00A.

Stockman, Richard F., to Air Preheater Company, Inc., The. Waste heat recovery. 3,861,334, Cl. 110-10.000.

Stoddard, Darrell D., to Ophthalmic Sciences, Inc. Melamine resin-polyol-polyurethane coating composition and article coated therewith. 3,862,261, Cl. 260-849.000.

Stoepel, Kurt: *See—*
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Stoffels, Carl A.; and Lofstrom, Roger J., to Judelshon Industries, Inc. Air chuck for roll slitting machine. 3,861,252, Cl. 82-40.00R.

Stoffels, Carl A.; and Lofstrom, Roger J., to Judelshon Industries, Inc. Self-loading roll slitter. 3,861,254, Cl. 82-90.000.

Storace, Anthony: *See—*
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Stork, Harald, to Boehringer Mannheim G.m.b.H. Quantitative determination of uric acid. 3,862,012, Cl. 195-103.50R.

Storni, Angelo: *See—*
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Story, Elwin G., to Lyons, Charles F., a part interest. Wire forming hand tool. 3,861,430, Cl. 140-106.000.

Story, Paul R.; Whited, E. A.; Alford, J. A.; Ray, Wesley C.; and Burgess, John R., to Research Corporation. Method of reductive ozonolysis of olefins to produce carbonyl compounds and intermediate products. 3,862,142, Cl. 260-338.000.

Straitz, John F. Flammable liquid waste burner. 3,861,857, Cl. 431-202.000.

Strauss, Udo: *See—*
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Streander, George W., to Designs Systems, Inc. Internal-type wrench for pipes and the like. 3,861,251, Cl. 81-71.000.

Strecker, Ruediger A. H., to United States of America, Navy. Organodilithium initiator for anionic polymerization, a novel polyisoprene, and processes for production thereof. 3,862,251, Cl. 260-665.00R.

Strickland, Robert V. Clamp bar for fabrics. 3,861,663, Cl. 269-26.000.

Strus, Leo H. Checkbook wallet with concealment feature. 3,861,718, Cl. 281-17.000.

Stuart, William R.; and Preist, Donald H., to Varian Associates. Ion sleeve for arc lamp electrode. 3,862,449, Cl. 313-217.000.

Stubbs, Dennis: *See—*
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Sturgeon, James L.; and Ford, Ronald K. Apparatus supporting a stationary automobile, for driver training. 3,861,064, Cl. 35-11.000.

Su, Cheh-Jen, to Continental Can Company. Creep stabilization of plastic articles. 3,862,288, Cl. 264-235.000.

Suess, Rudolf: *See—*
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Sugimura, Ryo, to Caterpillar Mitsubishi Ltd. Reel assembly for winding cable mounted on electric earthmoving machine. 3,861,505, Cl. 191-12.20R.

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Summerlin, Frederick Arthur, to AERPAT A.G. Fastener placing apparatus. 3,861,014, Cl. 29-200.00B.

Summers, Robert L. Gravity oil-water separator with two interconnected singular cells having automatic free oil discharge. 3,862,039, Cl. 210-252.000.

Sun Oil Company of Pennsylvania: *See—*
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Sun Research and Development Co.: *See—*
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Superior Dry Wall Screw Mfg., Co., Inc.: *See—*
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Superior Products: *See—*
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Supreme Equipment & Systems Corporation: *See—*
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Susi, Peter Vincent, to American Cyanamid Company. Hindered tris (meta-hydroxybenzyl)cyanurate antioxidants. 3,862,053, Cl. 252-403.000.
Sutherland, George S.: *See—*
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Sutures, Inc.: *See—*
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Suyama, Shiko, to Fujia Originals Kogyo Co., Ltd. Bathing float device. 3,860,976, Cl. 4-185.00B.
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Suzuki, Takamitsu; Takahashi, Akio; Oya, Shunichi; and Okamoto, Mamoru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Press for cold extrusion of deep-holed or bottomed cylindrical articles. 3,861,192, Cl. 72-267.000.
Suzuki, Yasoji; and Shigematsu, Tomohisa, to Tokyo Shibaura Electric Co., Ltd. Pulse transforming circuit arrangements using a clock pulse responsive delayed inverter means. 3,862,440, Cl. 307-266.000.
Swaim, Carl E., to General Electric Company. Method of making dynamoelectric machines. 3,861,026, Cl. 29-596.000.
Swain, Jack W.; Thomerson, Clarence T.; and Waldrop, Tom C., to Regal Tool & Rubber Co. Inc. Submerged pipeline stabilization. 3,861,158, Cl. 61-72.100.
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Symann, Heinz George, to Kupplungstechnik GmbH. Coupling for combustion engine. 3,861,172, Cl. 64-27.0NM.
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Taggart, Regin B. Drive-in bank teller operating system and mechanism. 3,861,119, Cl. 53-180.000.
Tajima, Yasutomo; Yasuda, Tsutomu; and Seki, Genichi, to Showa Manufacturing Co., Ltd. Saddle position adjusting device for a vehicle such as bicycle. 3,861,740, Cl. 297-195.000.
Takachiho Koeki Kabushiki Kaisha: *See—*
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Takae, Toshinori; Kawabe, Toyotaro; and Maeno, Shohei, to Mitsui Toatsu Chemicals, Incorporated. Process for removing dust from a gas stream. 3,861,889, Cl. 55-70.000.
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Takamura, Daigo. Device for hauling dragnet. 3,861,651, Cl. 254-137.000.
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Takeichi, Morio; and Ishigaki, Takashi, to Elmo Company Limited. Film cartridge for motion picture projector. 3,861,621, Cl. 242-197.000.
Takenaka, Hidetsugu: *See—*
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Takman, Bertil Herbert: *See—*
Adams, Herbert John Frederich; Kronberg, George Herbert; and Takman, Bertil Herbert, 3,862,321.
Tamura, Raymond M. Dynamic visual acuity testing system. 3,861,790, Cl. 351-17.000.
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, to Minolta Camera Kabushiki Kaisha. Apparatus for operating cassette of photosensitive element in electrophotographic copier. 3,861,613, Cl. 242-67.30R.
Tanaka, Susumu; Enoguchi, Yuji; and Iizaka, Isao, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying machine. 3,861,796, Cl. 355-8.000.
Tanaka, Takeshi: *See—*
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Tanaka, Wataru: *See—*
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Tangorra, Giorgio: *See—*
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Taniguchi, Shin-Ichi, to Takeda Chemical Industries, Ltd. Automatic cleansing apparatus for use in association with ampoules or similar containers. 3,861,409, Cl. 134-43.000.
Taniguchi, Tokuso. Automated catheter. 3,861,395, Cl. 128-349.00R.
Tanimoto, Kenji, to Fuji Xerox Co., Ltd. Pulse phase double modulation system for respectively modulating the leading and trailing edges of a carrier pulse with two different information signals. 3,862,363, Cl. 179-15.0AW.
Tanney, George: *See—*
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Tarazi, John H., to Arthur C. Withrow Company. Method for reducing smoke and dust in the process for manufacturing mineral wool. 3,861,895, Cl. 65-3.000.
Tarmy, Barry L.: *See—*
Okrent, Eugene H.; and Tarmy, Barry L., 3,861,998.
Tarnoff, Sherwin S., to Air Balance, Inc. Fire and heat radiation damper. 3,861,443, Cl. 160-1.000.
Tasaka, Katuhiko: *See—*
Shinohara, Yoshiyuki; Tasaka, Katuhiko; Mizui, Kinya; and Katayama, Shigeru, 3,862,089.

Tatsumi, Takumi: *See—*
Hamada, Tomohiro; Ueda, Atsushi; and Tatsumi, Takumi, 3,861,488.

Tawada, Akira: *See—*
Okuyama, Takashi; Yoshida, Keiichi; Sakurai, Katukiyo; Ogura, Takashi; Horie, Katuyuki; Tawada, Akira; and Hara, Tadashi, 3,862,003.

Taylor, Allen L., to Minnesota Mining and Manufacturing Company. Pyroelectric gas dosimeter. 3,861,879, Cl. 23-254.00E.

Taylor, Don A. Readily attachable accessory fins for automobile bodies. 3,861,735, Cl. 296-1.00S.

Taylor, John R.; Jones, Harold F.; and Ousterling, David L., to Allied Chemical Corporation. Liquid container with perforatable locking closure. 3,861,550, Cl. 215-250.000.

Taylor, John S., to FMC Corporation. Opaque cellophane for improved keeping. 3,861,931, Cl. 106-165.000.

Taylor, Joseph David Foulkes, to Lucas Electrical Company Limited, The. Road vehicle braking system incorporating wheel slide protection. 3,861,755, Cl. 303-21.0AF.

Taylor, Robert B.: *See—*
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Tazuke, Hideo: *See—*
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Rush, Robert L.; Delea, Anne C.; Stastny, Milos; and Lash, Edward D., 3,862,010.

Tedesco, George P. Collar and shirt collar protector. 3,860,967, Cl. 2-129.000.

Tektronix, Inc.: *See—*
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Olson, Ronald Arthur; and Luten, Gerrit, 3,862,356.

Tele-Resource, Inc.: *See—*
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Tenneco Inc.: *See—*
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Tennessee Valley Authority: *See—*
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Terakado, Ryozi: *See—*
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Teranishi, Hiroshi: *See—*
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Terrell, Ross C., to Airco, Inc. Ether compound as inhalation anesthetics. 3,862,240, Cl. 260-614.00F.

Terrell, Ross C., to Airco, Inc. 1,1,2,2,Tetrafluoroethyl fluoromethyl ether. 3,862,241, Cl. 260-614.00F.

Terrell, Ross C., to Airco, Inc. Method for purification. 3.862,242, Cl. 260-616.000.

Terry, Samuel M.; and Slominski, Walter V., to Hoover Ball and Bearing Co. Energy absorbing crash panel. 3,861,711, Cl. 280-150.00B.

Tetra Pak Developpement SA: *See—*
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Texaco, Inc.: *See—*
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Curtice, Beverly A.; and Hughes, James W., 3,861,468.
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Harnsberger, Bobby G., 3,861,467.
Lachowicz, Donald R.; and Holder, Charles B., 3,862,105.
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Texacone Co., The: *See—*
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Textron Inc.: *See—*
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Theijsmeijer, Frederik, to Rexnord Inc. Roller adjustment adaptor for screw adjustment of belt driven live roller conveyor rolls. 3,861,517, Cl. 198-127.00R.

Theissen, Robert James, to Mobil Oil Corporation. Process of making nitro phenoxybenzoic acid esters. 3,862,209, Cl. 260-471.00R.

Thekdi, Arvind C.: *See—*
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Therachemie Chemisch Therapeutische GmbH: *See—*
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Therm-O-Disc Incorporated: *See—*
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Thettu, Raghulinga R.; and Mermelstein, Robert, to Xerox Corporation. Dry fuser roll cleaning apparatus. 3,861,860, Cl. 432-59.000.

Thettu, Raghulinga R., to Xerox Corporation. Fuser roll cleaning apparatus. 3,861,861, Cl. 432-59.000.

Thieme, Peter: *See—*
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Thijssen, Henricus A., to General Foods Corporation. Solid-liquid packed bed extraction. 3,862,347, Cl. 426-434.000.

Thiokol Corporation: *See—*
McCullough, Edward E.; and Petersen, Jimmy, 3,862,359.

Thomas, Eugene P., to CGR Medical Corporation. Electronically controlled spot film device. 3,862,426, Cl. 250-402.000.

Thomas, Wesley L. Telephone. 3,862,375, Cl. 179-100.00R.

Thomas, William E., to Phillips Petroleum Company. Emergency cutter to sever continuous fibrous material. 3,861,842, Cl. 425-151.000.

Thomassin, Robert Charles. Flexible fishing lure. 3,861,073, Cl. 43-42.100.

Thomerson, Clarence T.: *See—*
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Thominet, Michel Leon, to Societe D'Etudes Scientifiques et Industrielles De L'Ile-De-France. Methods of protection against emesis in mammals by administration of a 3-alkoxy-thianaphthene-2-carboxamide. 3,862,320, Cl. 424-274.000.

Thompson, Arthur D., to Emco Limited. Pinch tube faucet. 3,861,421, Cl. 137-636.400.

Thompson, Daniel. Mechanical memory device. 3,861,337, Cl. 111-1.000.

Thompson, Elizabeth B. Detachable device for partially supporting a small child on a conventional toilet seat. 3,860,970, Cl. 4-1.000.

Thompson, Kenneth B., to Optical Standards Company, Incorporated. Compensated diopter gauge. 3,861,048, Cl. 33-174.00A.

Thompson, Stanley P. Flighting for dehydrator drum and method. 3,861,055, Cl. 34-10.000.

Thompson, Tommy Lewis, to Dow Chemical Investment and Finance Corporation. Oxygen generator cell. 3,861,880, Cl. 23-281.000.

Thomson, Elihu Craig, to Electronics Corporation of America. Sensing system for bar patterns. 3,862,400, Cl. 235-61.11E.

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Thurre, Eugene; and Roduit, Jean-Claude, to Barry S.A. Anti-skid device for wheeled vehicles. 3,861,752, Cl. 301-44.00T.

Ticknor, Raymond G., to Xerox Corporation. Bi-directional sheet transport. 3,861,673, Cl. 271-225.000.

Tingley, William E.; and Addiego, Joseph, to Nabisco, Inc. Reclosable carton. 3,861,583, Cl. 229-51.0TC.

Tipnis, Vijayakumar A.; Doubrava, James Harmon; and Joseph, Roger A., to Republic Steel Corporation. Calcium deoxidized, fine grain steels. 3,861,906, Cl. 75-124.000.

Tipple, William R.: *See—*
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Tixier, Rene, to Societe Generale De Recherches Et D'Applications Scientifiques "Sageras". Cinchona alkaloid salts and compositions containing them. 3,862,123, Cl. 260-234.00R.

Toda, Toshimasa: *See—*
Murayama, Keisuke; Toda, Toshimasa; Mori, Eika; Matsui, Katsuaki; Kurumada, Tomoyuki; Onta, Noriyuki; and Watanabe, Ichiro, 3,862,155.

Toi, Yasuo: *See—*
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Toji, Masuo, to du Pont de Nemours, E. I., and Company. Dehydrothio-p-toluidinesulfonic acid azo-hexahydro-4,6-dioxopyrimidineurea or cyanamide direct dyes for paper. 3,862,116, Cl. 260-154.000.

Tokaruk, Demetro U.: *See—*
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Tokheim Corporation: *See—*
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Tokumoto, Shinichi; and Hayashi, Chisayo, to Sony Corporation. Recording medium for a spark burning recorder. 3,861,952, Cl. 117-217.000.

Tokyo Denshi Kabushiki Kaisha: *See—*
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Tokyo Shibaura Electric Co., Ltd.: *See—*
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Nishiyama, Shoji; and Saito, Tsuyoshi, 3,861,666.
Noda, Tomimitsu, 3,862,390.
Suzuki, Yasoji; and Shigematsu, Tomohisa, 3,862,440.

Tolaas, William M.; and McLaren, Edwin C., to Hoerner Waldorf Corporation. Heatable pizza pie support. 3,861,576, Cl. 229-3.50R.

Tolles, Edward D., to Westvaco Corporation. Method for sorptive removal of sulfur gases. 3,862,295, Cl. 423-244.000.

Toms River Chemical Corporation: *See—*
Stingl, Hans Alfred, 3,862,119.

Tong, Duncan, to Playart Ltd. Display stands for models. 3,861,638, Cl. 248-407.000.

Tonomura, Benichiro: *See—*
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Torok, Ernest J., to Sperry Rand Corporation. Programmable diffraction grating. 3,861,784, Cl. 350-162.00R.

Toscan, Richard E. Sailboat racing calculator. 3,862,398, Cl. 235-61.0NV.

Toshiba Silicone Kabushiki Kaisha: *See—*
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Townsend, Wesley Peter: *See—*
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Trbovich, Nicholas D. Ball ejecting cone-shaped chance device. 3,861,685, Cl. 273-138.00R.

Triantafellow, Harry; and Graves, Ralph L., to General Electric Company. Wire terminal for aluminum wire. 3,861,773, Cl. 339-103.00R.

Trolle, Sten: *See—*
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Trombly, Michael E.; and Cowen, Samuel H., to Chemed Corporation. Method of manufacturing a reinforced examination gown. 3,861,974, Cl. 156-200.000.

Truax, Earl S. Electric knife. 3,861,039, Cl. 30-272.00A.

Trump, John G., to High Voltage Engineering Corporation. Apparatus and method for diminishing electric fields within containers of flammable material. 3,862,427, Cl. 250-494.000.

TRW Inc.: *See—*
Updyke, James H.; and Dalton, John W., 3,861,033.

Tsai, Shi-Cho. Life line. 3,861,497, Cl. 182-5.000.

Tsuchida, Eishun: *See—*
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Tsukamura, Takao; and Nakayama, Koji, to Nippon Steel Corporation. Apparatus for cooling metal material. 3,861,597, Cl. 239-536.000.

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Turner, William N., to Secretary of State for Defence. Method of manufacturing carbon fibres. 3,862,334, Cl. 423-447.000.

TWM Manufacturing Company, Inc.: *See—*
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Uchida, Hisashi: *See—*
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Uchida, Masaaki. Method and apparatus for press-insertion. 3,861,156, Cl. 61-53.500.

Uchiyama, Takashi. Vapor/liquid contactor. 3,862,281, Cl. 261-114.0VT.

Ueda, Atsushi: *See—*
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Ueno, Kisaburo; Koshi, Masato; Tada, Fujio; Hirose, Akira; and Takazawa, Yoshio, to Mitsui Toatsu Chemicals, Incorporated. Certain 2-acylamine-4-methyl-5-halothiazoles. 3,862,167, Cl. 260-306.80R.

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Umbach, Wilfried; Mehren, Rainer; and Stein, Werner, to Henkel & Cie GmbH. Hydroxycarboxylic acid nitriles and process. 3,862,204, Cl. 260-465.600.

Umezawa, Hamao; Takeuchi, Tomio; Miyano, Koichi; Hamano, Hiroaki; and Tanaka, Wataru, to Zaiden Hojin Biseibutsu Kagaku Kenkyu Kai. 5-(Haloalkyl) picolinic acid and derivatives. 3,862,159, Cl. 260-295.00R.

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Unger, Eberhard: *See—*
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Updyke, James H.; and Dalton, John W., to TRW Inc. Method of manufacturing a connector for insulated conductors. 3,861,033, Cl. 29-628.000.

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Uto, Yoshimitsu; Iwasaki, Yasuhiro; Yamamoto, Yoshihiro; Ooe, Tsutomu; and Nakayama, Ryohei, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of making welded joints for large vessels subject to hydrogen embrittlement. 3,861,883, Cl. 29-196.100.

Uyeda, Tim Minoru; and Workman, David Edward, to International Telephone and Telegraph Corporation. Toilet construction. 3,860,973, Cl. 4-80.000.

Vaillancourt, Vincent L.; Bruckner, Norman; and Levine, Edward, to Hydro Med Sciences Inc. Drainage tube. 3,861,396, Cl. 128-350.00R.

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Van der Wyk, Jack A. Drum pitch adjustment device. 3,861,265, Cl. 84-411.000.

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Norris, Paul R.; Van Haltern, Frank, Jr.; and Walz, David K., 3,861,572.

Van Riper, Richard W., Jr.; and Harbison, Richard L., to Ingress Manufacturing Co., Inc. Strap locking device with quick release. 3,860,997, Cl. 24-16.0PB.

Van Russelt, Michel; Bleiman, Claude; and Mercier, Jean, to GERDEC. Reinforced rubber compositions. 3,862,259, Cl. 260-754.000.

Varco International, Inc.: *See—*
Boyadjieff, George I.; and Otsap, Ben A., 3,861,464.

Varian Associates: *See—*
Stuart, William R.; and Preist, Donald H., 3,862,449.

Vasas, Martin M., to Bridgeport Metal Goods Manufacturing Company, The. Portal seal and wiper for product container. 3,861,810, Cl. 401-122.000.

Vater, Wulf: *See—*
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Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,862,162.

Vaughn, Robert Lee. Apparatus for administering supplemental medication with parenteral solutions. 3,861,388, Cl. 128-214.00R.

Veber, Leon. Sporting cartridge-case. 3,861,309, Cl. 102-44.000.

Veeder Industries, Inc.: *See—*
Johnson, Arnold Clayton, 3,862,385.

Veige, Sten Gunner: *See—*
Hogberg, Knut Bertil; Fex, Hans Jacob; Fredholm, Bo Goran; Perklev, Torsten Rune; and Veige, Sten Gunner, 3,862,270.

Veneklasen, Lee, to Siemens Aktiengesellschaft. Electron-beam illuminating system for an electrical apparatus such as an electron microscope or the like. 3,862,419, Cl. 250-306.000.

Vernova, Tatyana Pavlovna: *See—*
Isailingold, Anatoly Lvovich; Levin, Veniamin Anatolievich; Pilipenko, Fedor Semenovich; Vernova, Tatyana Pavlovna; Stepanov, Gennady Arkadievich; Bushin, Alexandr Nikitich; Sirotkin, Boris Vasilievich; Kozin, Valentin Vasilievich; Basner, Mark Ekhetskelevich; Erofeeva, Aida Vladimirovna; Peshkova, Nina Prokopievna; Tuktarova, Luiza Saidovna; Kirnos, Yakov Yakovlevich; Mikhailov, Ruslan Konstantinovich; Dolinin, Nikolai Zakharovich; Rastvorov, Jury Nikolaevich; and Eratova, Valeria Lvovna, 3,862,256.

Victor Comptometer Corporation: *See—*
Wilczewski, Robert H.; and Blomquist, James E., 3,861,510.

Vidakovits, Lajos J.: *See—*
Otte, Richard F.; and Vidakovits, Lajos J., 3,861,030.

Vidler, Michael A., to Saco-Lowell Corporation. Auxiliary ring rail positioning means for textile twister or like machine. 3,861,130, Cl. 57-54.000.

Villari, Frank K., to Kendall Company, The. Clearing means for a liquid drainage system. 3,861,394, Cl. 128-349.00R.

Vinals, Joaquin Francisco; Quinn, Alton Dewitt; and Pittet, Alan Owen, to International Flavors & Fragrances Inc. Novel tobacco product comprising one or more alpha-pyrones. 3,861,403, Cl. 131-17.00R.

Vincent, Frederick Reginald; and Auty, Brian, to Bath Institute of Medical Engineering. Wheels. 3,861,435, Cl. 152-5.000.

Vock, Manfred: *See—*
Schreiber, William Lewis; Mosciano, Gerard Joseph; Pittet, Alan O.; Vock, Manfred; and Shuster, Edward Joseph, 3,862,340.

Voelker, Dieter: *See—*
Bille, Heinz; Hann, Ernst Wilheim; Luetzel, Gerhard; Schmidt, Guenther; and Voelker, Dieter, 3,862,073.

Vogel, Charles A.: *See—*
Currell, Richard W.; Olah, Louis; and Vogel, Charles A., 3,862,289.

Vogel, Charles E.: *See—*
Dundas, Peter H.; Poole, John W.; and Vogel, Charles E., 3,862,393.

Vogel, Christian: *See—*
Moser, Hans; and Vogel, Christian, 3,861,899.

Volk, Albert J.: *See—*
Glover, George M.; Nimoy, Melvin; Petterson, DeWitt R.; and Volk, Albert J., 3,861,972.

Volkrodt, Wolfgang, to Siemens Aktiengesellschaft. Stator structure for permanent magnet excited machines. 3,862,445, Cl. 310-154.000.

Volkswagen Products Corporation: *See—*
Godwin, Hartsel L., 3,861,281.

Volkswagenwerk Aktiengesellschaft: *See—*
Hiestermann, Kurt, 3,861,377.

vom Hagen, Siegbert Graf. Instrument for measuring gas metabolism or changes in gaseous amounts. 3,861,195, Cl. 73-23.000.

Von Knorring, Folke: *See—*
Dahle, Orvar; Von Knorring, Folke; and Gylen, Nils, deceased, 3,861,203.

Von Schoppe, Bertram A., to Compo Industries, Inc. Adapter for use in shoe making. 3,860,985, Cl. 12-17.00R.

Von Strandtmann, Max: *See—*
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Von Strandtmann, Maximilian: *See—*
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Musil, Peter; Bucil, Frantisek; Spatenka, Karel; and Rysavy, Miroslav, 3,861,426.

W. R. Grace & Co.: *See—*
Guthrie, James L., 3,861,993.
Magnotta, Frank; Ketley, Arthur D.; and Matheson, Suzanne E., 3,861,917.
Marans, Nelson S., 3,862,099.

Wachter, Karl-August; and Rabenecker, Horst, to Dragerwerk Aktiengesellschaft. Measuring device having means for applying a selected pressure to a measured vessel. 3,861,216, Cl. 73-421.500.

Waggoner, Robert A., to U.S. Fiber Corporation. Insulation spray apparatus. 3,861,599, Cl. 239-654.000.

Wagner, Josef: *See—*
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Wagner, Kuno: *See—*
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Wagner, Leland Burns; and Cripe, Russell, to Penn Controls Inc. Pressure responsive device having stacked diaphragm assembly. 3,861,277, Cl. 92-34.000.

Wahlefeld, August Wilhelm; Mollering, Hans; Gruber, Wolfgang; Bernt, Erich; and Roeschlau, Peter, to Boehringer Mannheim G.m.b.H. Determination of triglycerides. 3,862,009, Cl. 195-103.50R.

Waide, Charles H.: *See—*
Steinberg, Meyer; Manowitz, Bernard; and Waide, Charles H., 3,861,155.

Waitkins, George R.; Deluca, Carmine V., Jr.; Miller, Harold A.; and Wilcox, Forrest S., to Mearl Corporation, The. Titanium dioxide nacreous pigments and process for the preparation thereof. 3,861,946, Cl. 117-100.00B.

Wakami, Noboru; Yabu, Toshiomi; and Hosono, Hiroo, to Matsushita Electric Industrial Co., Ltd. Magnetic tape drive system. 3,861,622, Cl. 242-188.000.

Wakao, Mitsuru: *See—*
Yamazaki, Shigezo; Wakao, Mitsuru; and Kobayashi, Yoshinori, 3,861,316.

Wakeman, Alfred W., to Kalart Victor Corporation. Cassette for a sound slide projector. 3,861,795, Cl. 353-120.000.

Walbridge, Lyman H., to Walter Kidde & Company, Inc. Flame monitoring system. 3,861,854, Cl. 431-80.000.

Walde, Robert A.: *See—*
Erby, William A.; and Walde, Robert A., 3,862,220.

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Waldvogel, Erwin: *See—*
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Walendzik, Henry Stanley; and Bailey, Gene Robert, to Jovil Manufacturing Company. Shuttle for coil winding machine. 3,861,605, Cl. 242-4.00B.

Waleson, Donald: *See—*
Barecki, Chester J.; and Waleson, Donald, 3,861,556.

Walker, Basil E., Jr.; Spann, J. Richard; and Rice, Roy W., to United States of America, Navy. Strengthened and high density batio . 3,862,046, Cl. 252-62.900.

Walker, Darrell W.: *See—*
Bertus, Brent J.; and Walker, Darrell W., 3,862,255.
Walker, David G., to Tenneco Chemicals, Inc. Process for safe storage, handling, and use of acetylene. 3,861,160, Cl. 62-48.000.
Walker, Jack McLean: *See—*
Smith-Johannsen, Robert; and Walker, Jack McLean, 3,861,029.
Wallace, Richard A.: *See—*
Lieb, Nathaniel H.; and Wallace, Richard A., 3,861,043.
Waller, Campbell E. Sharpening device. 3,861,246, Cl. 76-86.000.
Wallis, Marvin E. Film forming head. 3,861,850, Cl. 425-461.000.
Wallshein, Melvin. Orthodontic arch wire and method of forming the same. 3,861,042, Cl. 32-14.00A.
Walsh, David I.: *See—*
Laird, William F.; Walsh, David I.; and Corneau, George E., 3,861,257.
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Walters, George E.: *See—*
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Walz, David K.: *See—*
Norris, Paul R.; Van Haltern, Frank, Jr.; and Walz, David K., 3,861,572.
Wanger, Robert P., to General Electric Company. Duct with vanes having selectively variable pitch. 3,861,822, Cl. 415-147.000.
Wannag, Arne T. Clamp for surgical purpose, preferably for holding together fabrics serving to limit an operation field. 3,861,008, Cl. 24-255.00P.
Ward, John P.: *See—*
Goodnight, Fred H.; Walters, George E.; and Ward, John P., 3,861,321.
Ward, Michael Dudley: *See—*
Rimington, Irene Lesley; and Ward, Michael Dudley, 3,862,312.
Ware, Richard Louis. Display cabinet, track and controls. 3,861,519, Cl. 198-158.000.
Warner-Lambert Company: *See—*
Cohen, Marvin P.; and Von Strandtmann, Max, 3,862,214.
Kaminsky, Daniel, 3,862,144.
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Klutchko, Sylvester; Brown, Richard E.; and Von Strandtmann, Maximilian, 3,862,143.
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Waters, James P., to United Aircraft Corporation. Holographic spatial encoder. 3,862,428, Cl. 250-570.000.
Watson, George A., to Reeves Brothers Inc. Hydrodynamic reticulation of polyurethane foam. 3,862,282, Cl. 264-41.000.
Watson, Harold G.: *See—*
Sadler, Robert F.; and Watson, Harold G., 3,861,625.
Watson, Keith: *See—*
Rapoza, Edward J.; and Watson, Keith, 3,861,800.
Watson, Roy; and Miller, Kenneth M., to General Foods Corporation. Container and closure therefor and method of manufacture thereof. 3,861,549, Cl. 215-232.000.
Watson, William R.: *See—*
Robertson, Reed S.; and Watson, William R., 3,861,876.
Watts, James R. Telephone cable pipe cable assembly and method. 3,862,349, Cl. 174-11.00R.
Weaver, David Roland: *See—*
Emery, Anthony George Montague; Munday, Charles Walter; and Weaver, David Roland, 3,861,805.
Weber, Karl Heinz: *See—*
Bauer, Adolf; Weber, Karl Heinz; Minck, Klaus; and Danneberg, Peter, 3,862,136.
Weberndorfer, Volkmar, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 4-methyloxazoles. 3,862,169, Cl. 260-307.00R.
Webster, Donald R., to Neotec Corporation. Optical analyzer for agricultural products. 3,861,788, Cl. 350-315.000.
Webster, Owen Wright, to du Pont de Nemours, E. I., and Company. Oxidation of diaminomaleonitrile to diiminosuccinonitrile. 3,862,205, Cl. 260-465.50R.
Wegmuller, Hans: *See—*
Schaffner, Karl; Siegrist, Gerald; and Wegmuller, Hans, 3,861,871.
Weiler, Manfred: *See—*
Bauer, Karl-Heinz; and Weiler, Manfred, 3,861,451.
Weinblatt, Marvin: *See—*
Ashenfarb, Sidney; Weinblatt, Marvin; and Glowzenski, Leonard F., 3,861,989.
Weingarten, Joseph L. Extrusion apparatus for producing large scale products. 3,861,848, Cl. 425-378.000.
Weinreich, Siegfried, to Gebrigder Heller. Boring head with exchangeable blade. 3,861,010, Cl. 29-96.000.
Welch, Emelie Legros, possesor: *See—*
Welch, Harlan C., deceased, 3,861,734.
Welch, Harlan: *See—*
Welch, Harlan C., deceased, 3,861,734.
Welch, Harlan C., deceased (by Welch, Emelie Legros, possesor), to Welch, Maxine; and Welch, Harlan, part interest to each. Tubular safety pick-up sling. 3,861,734, Cl. 294-74.000.
Welch, Maxine: *See—*
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Welkowsky, Murray S.: *See—*
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Wellman Company: *See—*
Polleys, Herbert R., 3,861,006.
Weltman, Henry J.; Carroll, Mark T.; Halkias, John E.; Kaarlela, William T.; and Reynolds, Jack D., to General Dynamics Corporation. Method and composition for detecting flaws in metallic surfaces, holes and otherwise. 3,862,047, Cl. 252-62.520.
Wenderoth, Karl, to Adlerwerke vorm. Heinrich Kleyer. Latching key mechanism. 3,861,235, Cl. 74-483.0PB.
Wendling, Paul R. Apparatus and method for simultaneously painting both sides of a wire fence. 3,861,594, Cl. 239-1.000.
Wennemann, Werner: *See—*
Hoffmann, Ralf; and Wennemann, Werner, 3,861,574.
Wentzell, James G. Remote spray device. 3,861,566, Cl. 222-174.000.
Werner H.K. Peters Maschinenfabrik G.m.b.H.: *See—*
Wittstock, Gerhard; and Hofmeister, Walter, 3,861,057.
Wertlake, Paul T.; and Harrison, James S., to Applied Bioscience. Histological fixative. 3,862,300, Cl. 424-3.000.
Western Electric Company, Incorporated: *See—*
Connole, Kent Brian; and Townsend, Wesley Peter, 3,861,978.
Westinghouse Electric Corporation: *See—*
Dixon, George D.; Mendelsoh, Morris A.; and Ruffing, Charles R., 3,862,083.
Westmoreland Plastics Company, division of Vulcan, Inc.: *See—*
Skinner, Harvey G., 3,861,746.
Westover, Jack D.; and Kiploks, Elmars M., to Pillsbury Company, The. Process for removing the peels from cooked mashed potatoes which may subsequently be dehydrated. 3,862,345, Cl. 426-262.000.
Westvaco Corporation: *See—*
Tolles, Edward D., 3,862,295.
Wheeldon, N. R. Exercisers. 3,861,677, Cl. 272-79.00B.
Wheeler, John H., to Texacone Co., The. Packing member. 3,861,691, Cl. 277-205.000.
Whelan, John C., to California Pellet Mill Company. Fluidized bed grain processor. 3,861,058, Cl. 34-57.00R.
Whirlpool Corporation: *See—*
Christianson, Robert W., 3,861,238.
Whisson, Hubert James. Fabricated partitions. 3,861,101, Cl. 52-238.000.
Whitaker, Ranald Otis. Musical tuning instrument utilizing digital techniques. 3,861,266, Cl. 84-454.000.
Whitaker, Robert Chase, to Providence Pile Fabric Corp. Chenille yarn-producing machine. 3,861,128, Cl. 57-24.000.
White, Harold R.: *See—*
Doncer, Alex J.; and White, Harold R., 3,861,890.
White, Stanley F. Cone construction for loudspeaker. 3,862,376, Cl. 179-115.00R.
Whited, E. A.: *See—*
Story, Paul R.; Whited, E. A.; Alford, J. A.; Ray, Wesley C.; and Burgess, John R., 3,862,142.
Whitney, Keith B. Curtain draw assembly. 3,861,738, Cl. 296-138.000.
Wichmann, Guenter: *See—*
Abel, Konrad; Seibecker, Hans; and Wichmann, Guenter, 3,862,424.
Wichterle, Otto, to Ceskoslovenska akademie ved. Heart valve. 3,861,416, Cl. 137-525.300.
Wieloch, Francis John, to Xerox Corporation. Method of detecting pressure uniformity. 3,861,202, Cl. 73-88.00R.
Wigner, David H., Jr. Portable bending apparatus. 3,861,186, Cl. 72-217.000.
Wilcox, Forrest S.: *See—*
Waitkins, George R.; Deluca, Carmine V., Jr.; Miller, Harold A.; and Wilcox, Forrest S., 3,861,946.
Wilczewski, Robert H.; and Blomquist, James E., to Victor Comptometer Corporation. Serial printer power drive and timing mechanism. 3,861,510, Cl. 197-1.00R.
Wild, Hermann; and Klossika, Rolf-Dieter, to J. G. Anschultz GmbH. Handstop and sling swivel accessory for sporting guns. 3,861,070, Cl. 42-85.000.
Wiley, Nathaniel C., to Rudkin-Wiley Corporation. Process for vacuum bag molding. 3,861,977, Cl. 156-242.000.
Wilfert, Karl, to Daimler-Benz Aktiengesellschaft. Energy-absorbing instrument panel for motor vehicles. 3,861,486, Cl. 180-90.000.
Wilhelm, Max: *See—*
Beck, Dieter; Bernasconi, Raymond; Schenker, Karl; Storni, Angelo; and Wilhelm, Max, 3,862,131.
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Willems, Gerardus Antonius Maria, to U.S. Philips Corporation. Device for an apparatus for the automatic electric arc welding apparatus. 3,862,392, Cl. 219-73.000.
Williams Gold Refining Company Incorporated: *See—*
Ingersoll, Clyde E., 3,861,455.

Williams, Malcolm; Brunt, Geoffrey Albert Kenyon; and Jones, Christopher Robin, to C. A. V. Limited. Control systems for engines. 3,861,363, Cl. 123-32.0EA.

Williams, Oscar Stanley, to Willkie, Philip H., a part interest. Vehicle shock absorber. 3,861,729, Cl. 293-68.000.

Williamson, Leonard W.: *See—*
Choate, Richard V.; and Williamson, Leonard W., 3,861,019.

Willis, Frank M.: *See—*
Llewellyn, Walter E.; and Willis, Frank M., 3,861,522.

Willis, William M., to Lockheed Aircraft Corporation. Coined ground stud. 3,861,774, Cl. 339-14.00R.

Willison, Charles: *See—*
Horton, Lawrence R.; Mumford, G. Val; Jackson, Charles A.; Holcomb, William P.; Horton, Catherine; and Willison, Charles, 3,861,162.

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Wilson, Edmund B., III: *See—*
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Wilson, Edward L.; McCluskey, John J.; Bell, Ronald Z.; Linak, Richard T.; and Armstrong, Gordon P., to Owens-Corning Fiberglas Corporation. Apparatus for producing sheet molding composite. 3,861,982, Cl. 156-356.000.

Wilson, James D., to Banner Metals, Inc. Transport cart. 3,861,702, Cl. 280-33.99H.

Wilson, James D., to Banner Metals Division of Intercole Automation, Inc. Nestable security cage for bulk mail, and the like. 3,861,768, Cl. 312-250.000.

Wilson, Kermit H.: *See—*
Bue, Richard C.; and Wilson, Kermit H., 3,861,325.

Winn & Coales (Denso) Ltd.: *See—*
Wright, Sidney Henry, 3,861,655.

Winner, Richard N.: *See—*
Dill, Hans G.; Ernstoff, Michael N.; Finnila, Ronald M.; Hoffman, William C.; Leupp, Alex M.; and Winner, Richard N., 3,862,360.

Winter, Lloyd E., to Ciba-Geigy Corporation. Extrudable plaste tooling method. 3,861,936, Cl. 117-8.000.

Winther, Thorkil. Steam pack cover and snap fastening devices therefor. 3,861,389, Cl. 128-254.000.

Wirstlin, Arthur N.: *See—*
Wittern, Francis A.; and Wirstlin, Arthur N., 3,861,561.

Wirth, Christian: *See—*
Hanneken, George; and Wirth, Christian, 3,861,937.

Wirth, Paul H. Time saving drain assembly for sinks, bathtubs, etc.. 3,860,978, Cl. 4-207.000.

Wisdom, Norvell E., Jr.; and Gladstone, Matthew T., to Norton Company. Coated abrasive material and manner of manufacture. 3,861,892, Cl. 51-295.000.

Wise, Richard M., to General Tire & Rubber Company, The. Composite of polyester bonded to rubber, method for making the same and composition. 3,861,980, Cl. 156-331.000.

Wiseman, Edward A.: *See—*
Lombardino, Joseph G.; and Wiseman, Edward A., 3,862,319.

Wiskott, Erik, to Therachemie Chemisch Therapeutische GmbH. 2-(Dialkylamino, pyrrolidino or piperidino)-3-amino-5-nitro pyridines. 3,862,157, Cl. 260-293.690.

Wistreich, Hugo E.: *See—*
Gilliland, Robert D.; and Wistreich, Hugo E., 3,861,292.

Witcraft, Richard L.; and Palmeri, Joseph J., to Unipat Corporation of America II. Roll tape cutting machine. 3,861,253, Cl. 82-48.000.

Witman, Ronald L.; and Klinger, Guy G., to ESB Incorporated. Disposable respirator. 3,861,381, Cl. 128-146.600.

Witt, Donald R., to Phillips Petroleum Company. Large pore silica gel catalysts. 3,862,104, Cl. 260-94.90D.

Wittern, Francis A.; and Wirstlin, Arthur N., to Fawn Engineering. Vending machine raised helix discharge unit. 3,861,561, Cl. 221-75.000.

Wittstock, Gerhard; and Hofmeister, Walter, to Werner H.K. Peters Maschinenfabrik G.m.b.H. Heating apparatus for material in strip form. 3,861,057, Cl. 34-54.000.

Wix Corporation: *See—*
Simmons, Phillip J., 3,862,036.

Wix Corporation Limited: *See—*
Simmons, Phillip J., 3,862,036.

Wixson, Donald F.: *See—*
Ostrander, George K.; and Wixson, Donald F., 3,861,458.

Wochner, Fred Joseph, to Dennison Manufacturing Company. Decorating apparatus. 3,861,986, Cl. 156-542.000.

Woehler, Harold L., to Fedders Corporation. Indicating device for a dishwasher. 3,861,413, Cl. 137-334.000.

Woerner, Lloyd M.; and Currin, Cedric G., to Dow Corning Corporation. Production method for polycrystalline semiconductor bodies. 3,862,020, Cl. 264-81.000.

Wolf, Dieter: *See—*
Schwindt, Wolfgang; Wolf, Dieter; Bachs, Karl; and Mueller, Richard, 3,861,869.

Wolf, Gerhard Dieter; Kunzel, Hans Egon; Blankenstein, Gunter; and Bentz, Francis, to Bayer Aktiengesellschaft. Soluble aromatic copolyamides and threads thereof with a high modulus of elasticity and high tensile strength. 3,862,088, Cl. 260-47.0CZ.

Wolf, Warren W., to Owens-Corning Fiberglas Corporation. Alkali-resistant, zirconia-free, fiberizable glass compositions. 3,861,925, Cl. 106-50.000.

Wolff, Hanns H., to United States of America, Navy. Visual simulation system. 3,862,358, Cl. 178-6.800.

Wolff, Robert E., to Minnesota Mining and Manufacturing Company. Magnetic tape position sensing. 3,861,619, Cl. 242-188.000.

Wolters, Frederick J.: *See—*
Chacon, Manuel Frank; and Wolters, Frederick J., 3,861,134.

Wood, Charles E.: *See—*
Manis, Charles A.; and Wood, Charles E., 3,861,579.

Wood, Vernon. Sheet registration apparatus for printing machine. 3,861,668, Cl. 271-15.000.

Wood, William P. Lightweight, deep-trolling rig for fishing tackle. 3,861,074, Cl. 43-43.120.

Woods, Gilbert Frederick; Cairns, James; and McGarry, George, to Akzona Incorporated. Alkylated 3,20-diketo-d^4-steroids of the pregnane series. 3,862,194, Cl. 260-397.300.

Woods, Norman Harry, to Normar Engineering Company Limited. Hydraulic actuators. 3,861,144, Cl. 60-386.000.

Woodward, Robert B.: *See—*
Conover, Lloyd H.; and Woodward, Robert B., 3,862,225.

Workman, David Edward: *See—*
Uyeda, Tim Minoru; and Workman, David Edward, 3,860,973.

Wright Machinery Company, Inc.: *See—*
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Wright, Sidney Henry, to Winn & Coales (Denso) Ltd. Device for mixing apparatus. 3,861,655, Cl. 259-107.000.

Wristers, Harry Jan: *See—*
Buben, David; Bearden, Roby, Jr.; and Wristers, Harry Jan, 3,862,257.

Wulz, Klaus: *See—*
Zeeh, Bernd; Wulz, Klaus; and Fischer, Adolf, 3,862,208.

Wymann, Hans, to Ruti Machinen Works Ltd., formerly Caspar Honeggen. Arrangement for drying a fabric. 3,861,062, Cl. 34-160.000.

Wynn, Gordon William. Location apparatus. 3,861,665, Cl. 269-87.200.

Xerox Corporation: *See—*
Erhart, Francis J.; and Schroeder, Harold H., 3,861,353.
Hendrickson, James A., 3,861,219.
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Kraft, William A., 3,861,670.
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Lehmbeck, Donald R., 3,861,804.
Luebbe, Ray H., Jr., 3,861,911.
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Thettu, Raghulinga R.; and Mermelstein, Robert, 3,861,860.
Thettu, Raghulinga R., 3,861,861.
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Xonics, Inc.: *See—*
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Yahata, Kenji: *See—*
Hiramatsu, Takeo; Yahata, Kenji; and Futaki, Shigeki, 3,861,502.

Yale, Brian: *See—*
Irlam, Phillip Sidney; and Yale, Brian, 3,861,926.

Yamada, Hirokazu; and Sato, Akihiro, to Ashimori Kogyo Kabushiki Kaisha. Safety belt. 3,861,744, Cl. 297-386.000.

Yamamoto, Atsushi; Teranishi, Hiroshi; Furukawa, Tadayasu; and Matsuki, Takashi, to Kyowa Hakko Kogyo Co., Ltd. Method for shaping cell protein. 3,862,290, Cl. 264-202.000.

Yamamoto, Katsuro, to Bridgestone Liquefied Gas Company, Ltd. Method of constructing a low temperature liquefied gas tank of a membrane type. 3,861,021, Cl. 29-455.000.

Yamamoto, Katsuro, to Bridgestone Liquefied Gas Company, Ltd. Means for supporting an inner membranous vessel of a low temperature liquefied gas tank of a membrane type. 3,861,553, Cl. 220-9.0LG.

Yamamoto, Keisuke: *See—*
Kawamata, Yukio; Yamamoto, Keisuke; and Fujimori, Toshimitsu, 3,862,354.

Yamamoto, Yoshihiro: *See—*
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Yamazaki, Shigezo; Wakao, Mitsuru; and Kobayashi, Yoshinori, to Japanese National Railways; and Kayabakoyo-Kabushiki-Kaisha. Freight car classificaton system at level classification yard. 3,861,316, Cl. 104-26.00R.

Yamazaki, Yoshio: *See—*
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Yazaki, Komei, to Nissan Motor Company Limited. Compression spring assembly. 3,861,661, Cl. 267-33.000.

Yelland, Robert L.: *See—*
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Yellow Springs Instrument Company, Inc., The: *See—*
Siyahi, Mustafa, 3,861,214.
Yokokawa, Kiyoshi; Koizumi, Jun; and Mizutani, Shigeo. Granular silicone molding compositions. 3,862,065, Cl. 260-18.00S.
Yokosuka, Toshio: *See—*
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Yoshida, Akira: *See—*
Sato, Toshio; Katsumi, Mamoru; Tsuda, Natsuko; and Yoshida, Akira, 3,862,045.
Yoshida, Keiichi: *See—*
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Young, Jay De. Boat handler. 3,861,731, Cl. 294-19.00R.
Young, Roger W.: *See—*
Bonwit, Willard R.; Shaurins, Valdis; and Young, Roger W., 3,861,351.
Young, Sherwood L., to American Standard Inc. Flush tank apparatus. 3,860,979, Cl. 4-249.000.
Young, Stephen A.: *See—*
Politz, William E., 3,860,977.
Yurchak, Sergei: *See—*
Huang, Tracy J.; Silvestri, Anthony J.; and Yurchak, Sergei, 3,862,258.
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Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf Dieter, 3,862,308.
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Zaiden Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Miyano, Koichi; Hamano, Hiroaki; and Tanaka, Wataru, 3,862,159.
Zandstra, Bertrus H.; and Bosman, Jan, to Akzona Incorporated. Preparation of polyethylene terephthalate containing inorganic fillers. 3,862,084, Cl. 260-40.00P.
Zax, Grigory Iosifovich: *See—*
Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Frumkin, Mikhail Evseevich; and Mirchevsky, Petr Nikolaevich, 3,861,537.
Zeeh, Bernd; Wulz, Klaus; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Substituted n-(3-aminocarbonyloxyphenyl)-n-methylureas. 3,862,208, Cl. 260-471.00A.
Zellweger AG: *See—*
Forgo, Gabor; Meyer, Erwin; and Moser, Karl, 3,861,940.
Zhubanov, Kair Akmetovich: *See—*
Sokolsky, Dmitry Vladimirovich; Zhubanov, Kair Akmetovich; Shumateva, Ninel Fedorovna; Mazin, Evgeny Petrovich; and Sokolskaya, Aida Mosieevna, 3,862,054.
Zibin, Dzintar Karlovich. Multi-phase pulse counter. 3,862,401, Cl. 235-92.0LG.
Zimmerman, Adolf: *See—*
Lesk, Adolf; Zimmerman, Adolf; and Link, Otmar, 3,861,753.
Zimmermann, Werner: *See—*
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Zink, Anton, to Daimler-Benz Aktiengesellschaft. Mechanism for adjusting and maintaining the valve play in internal combustion engines, especially in motor vehicle internal combustion engines. 3,861,365, Cl. 123-90.430.
Zinnes, Harold; and Lindo, Neil A., to Warner-Lambert Company. 4-Hydroxy-2h- 1-benzothiopyran-3-carboxamide 1,1-dioxides. 3,862,140, Cl. 260-327.0TH.
Zmola, Paul C.; and Rickert, Royce J., to Combustion Engineering, Inc. Nuclear reactor arrangement and method of operating safe effective to increase the thermal amargin in high power density regions. 3,861,999, Cl. 176-61.000.
Zobel, Frederick A., to General Foods Corporation. Method of dielectrically sealing in sandwich making. 3,862,344, Cl. 426-244.000.
Zocher, Josef, to Singer Company, The. Method for making latch needles. 3,861,446, Cl. 163-5.000.
Zoludow, Richard S.: *See—*
Phillips, James W.; and Zoludow, Richard S., 3,862,387.
Phillips, James W.; and Zoludow, Richard S., 3,862,416.
Zucker, Fredric E.; Storace, Anthony; and Sette, Paul R., to Pitney-Bowes, Inc. High speed weighing scale. 3,861,480, Cl. 177-210.000.
Zugai, John. Tool to loosen frozen work pieces. 3,861,250, Cl. 81-52.350.
Zwisler, Oswald; and Biel, Hans Joachim, to Behringwerke Aktiengesellschaft. Process for isolating thromboplastic material from human placentae. 3,862,314, Cl. 424-105.000.
Zygmunt, Frank J. Ignition cable identification system for internal combustion engines. 3,861,068, Cl. 40-2.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF JANUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Avco Corp.: *See*—
Burke, Howard B., Jr. Re. 28,306.

Banker, Gilbert S., and H. Goodman, to Purdue Research Foundation. Entrapment compositions and processes. Re. 28,316, 1–21–75, Cl. 424—22.

Basche, Malcolm, R. Fanti, F. S. Galasso, U. E. Kuntz, and R. D. Schile, to United Aircraft Corp. Method for producing boron-carbon fibers. Re. 28,312, 1–21–75, Cl. 117—216.

Bayer Aktiengesellschaft: *See*—
Wolf, Gerhard, Blankenstein, and Nischk. Re. 28,314.

Blankenstein, Gunter: *See*—
Wolf, Gerhard, Blankenstein, and Nischk. Re. 28,314.

Burke, Howard B., Jr., to Avco Corp. Automatic electric power supply and speed control system for automated driverless vehicles. Re. 28,306, 1–21–75, Cl. 104—152.

Cascade Corp.: *See*—
Farmer, Stanley E. Re. 28,309.

Cincinnati Mine Machinery Co., The: *See*—
Krekeler, Claude B. Re. 28, 310.

Combustion Engineering, Inc.: *See*—
Williamson, Ronald E., Porter, and Shotting. Re. 28,305.

Cummings, Gilbert A., to Peters & Co., Inc. Dispensing apparatus. Re. 28,311, 1–21–75, Cl. 312—71.

Dominick, George G., R. Sciacero, G. I. Wimpffen, and T. L. Kardos, to Qonaar Corp. Exact fare system. Re. 28,307. 1–21–75, Cl. 232—7.

Dominick, George G., R. Sciacero, L. J. Weber, G. I Wimpffen, and T. L. Kardos. Cash acceptance receptacle. Re. 28,308, 1–21–75, Cl. 232—16.

Etablissements Clin-Byla: *See*—
Schmitt, Josef, and M. A. G. (nee Lecocq). Re. 28,315.

Fanti, Roy: *See*—
Basche, Malcolm, Fanti, Galasso, Kuntz, and Schile. Re. 28,312.

Farmer, Stanley E., to Cascade Corp. Roll clamp. Re. 28,309, 1–21–75, Cl. 294—88.

Galasso, Francis S.: *See*—
Basche, Malcolm, Fanti, Galasso, Kuntz, and Schile. Re. 28,312.

Godman, Harris: *See*—
Banker, Gilbert S., and Goodman. Re. 28,316.

Hostetter, Ernest W., to Lincoln Water Clinic. Carbon water filter. Re. 28,313, 1–21–75, Cl. 210—170.

Kardos, Theodore L.: *See*—
Dominick, George G., Sciacero, Wimpffen, and Kardos. Re. 28,307.
Dominick, George G., Sciacero, Weber, Wimpffen, and Kardos. Re. 28,308.

Krekeler, Claude B., to The Cincinnati Mine Machinery Co. Means for removably affixing cutter bit and lug assemblies to driven elements of a mining machine or the like. Re. 28,310, 1–21–75, Cl. 299—93.

Kuntz, Urban E.: *See*—
Basche, Malcolm, Fanti, Galasso, Kuntz, and Schile. Re. 28,312.

Lee, Sing Ling, to Yoder Brothers Inc. Chrysanthemum plant. Re. 28,304, 1–21–75, Cl. 7.

Lincoln Water Clinic: *See*—
Hostetter, Ernest W. Re. 28,313.

Nischk, Gunther: *See*—
Wolf, Gerhard, Blankenstein, and Nischk. Re. 28,314.

Peters & Co., Inc.: *See*—
Cummings, Gilbert A. Re. 28,311.

Porter, Sidney C., Jr.: *See*—
Williamson, Ronald E., Porter, and Shotting. Re. 28,305.

Purdue Research Foundation: *See*—
Banker, Gilbert S., and Goodman. Re. 28,316.

Qonaar Corp.: *See*—
Dominick, George G., Sciacero, Wimpffen, and Kardos. Re. 28,307.

Schile, Richard D.: *See*—
Basche, Malcolm, Fanti, Galasso, Kuntz, and Schile. Re. 28,312.

Schmit, Josef, deceased, by M. A. G. Schmitt (nee Lecocq), administrator, to Etablissements Clin-Byla. 1,4-benzodiazepine-2-ones having a carboxylic acid ester or amide group in the 3-position. Re. 28,315, 1–21–75, Cl. 260—239.30.

Schmitt, Marcelle A. G. (nee Lecocq): *See*—
Schmitt, Josef, and M. A. G. (nee Lecocq). Re. 28,315.

Sciacero, Rinaldo: *See*—
Dominick, George G., Sciacero, Wimpffen, and Kardos. Re. 28,307.
Dominick, George G., Sciacero. Weber, Wimpffen, and Kardos. Re. 28,308.

Shotting, Kenneth F.: *See*—
Williamson, Ronald E., Porter, and Shotting. Re. 28,305.

United Aircraft Corp.: *See*—
Basche, Malcolm, Fanti, Galasso, Kuntz, and Schile. Re. 28,312.

Weber, Leonard J.: *See*—
Dominick, George G., Sciacero, Weber, Wimpffen, and Kardos. Re. 28,308.

Williamson, Ronald E., S. C. Porter, Jr., and K. F. Shotting, to Combustion Engineering, Inc. Automated bricklaying device. Re. 28,305, 1–21–75, Cl. 52—749.

Wimpffen, George I.: *See*—
Dominick, George G., Sciacero, Wimpffen, and Kardos. Re. 28,307.
Dominick, George G., Sciacero, Weber, Wimpffen, and Kardos. Re. 28,308.

Wolf, Gerhard D., G. Blankenstein, and G. Nischk, to Bayer Aktiengesellschaft. High molecular weight aromatic polyamides having an affinity for basic dyes. Re. 28,314, 1–21–75, Cl. 260—857.

Yoder Brothers Inc.: *See*—
Lee, Sing Ling. Re. 28,304.

LIST OF DESIGN PATENTEES

Achenbach, Walter B., to Owens-Illinois, Inc. Goblet or similar article. 234,107, 1–21–75, Cl. D7—12.

Achenbach, Walter B., to Owens-Illinois, Inc. Goblet or similar article. 234,108, 1–21–75, Cl. D7—13.

Achenbach, Walter B., to Owens-Illinois, Inc. Goblet or similar article. 234,109, 1–21–75, Cl. D7—12.

Achenbach, Walter B., to Owens-Illinois, Inc. Tumbler or similar article. 234,110, 1–21–75, Cl. D7—15.

Achenbach, Walter B., to Owens-Illinois, Inc. Tumbler or similar article. 234,111, 1–21–75, Cl. D7—15.

Achenbach, Walter B., to Owens-Illinois, Inc. Tumbler or similar article. 234,112, 1–21–75, Cl. D7—15.

Amoroso, Nicholas A., to Bright Star Industries, Inc. Bicycle reflector. 234,129, 1–21–75, Cl. D10—111.

Andersen, Find, to Karl K. K. Kroyer. Sanitary napkin. 234,-162, 1–21–75, Cl. D83—1.

Armstrong Cork Co.: *See*—
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Sienkiewicz, Joseph E. 234,134.

Baker, Graham: *See*—
Peppler, William S., Keen, Siciliano, and Baker. 234,145.

Bender, T. Jerry. Reflective warning disc for bicycles. 234,-126, 1–21–75, Cl. D10—111.

Bergmann, Karl H., and R. G. Gelak, to Melitta, Inc. Coffeemaker or the like. 234,114, 1–21–75, Cl. D7—85.

Berwick Industries Inc.: *See*—
Horblitt, Saul M. 234,122.

Bishop, Thomas R., to Hickory Springs Mfg. Co. Portable compression tester for plastic foam. 234,127, 1–21–75, Cl. D10—83.

Bordewyk, Gordon L.: *See*—
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Budd, Randall M. Combined packaging container and stand therefor. 234,121, 1–21–75, Cl. D9—182.

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Clark, Carl J. Gun holster. 234,137, 1–21–75, Cl. D22—13.

Conrad, Arthur. Combination window cover and shade. 234,-135, 1–21–75, Cl. D21—6.

Corbin Gentry, Inc.: *See*—
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Cross, Lloyd E., Jr. Spinner toy. 234,151, 1–21–75, Cl. D34—15.

Deutsche Semperit GmbH: *See*—
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Douglas, Lloyd A. Precision welding kit. 234,116, 1–21–75, Cl. D8—30.

Diamond International Corp.: *See*—
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Eastman Kodak Co.: *See*—
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Echterling, Eugene J., to Questor Corp. Mirrored cradle gym toy. 243,152, 1–21–75, Cl. D34—15.

Echterling, Eugene J., to Questor Corp. Cradle gym toy. 234,-153, 1–21–75, Cl. D34—15.

Edstrom, Elle. Gunsight. 234,136, 1–21–75, Cl. D22—8.

Electrohome Ltd.: *See*—
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McQuarrie, Harvey K. 234,158.

Fassauer, Arthur L., to Fassauer Industries, Inc. Pet waterer. 234,144, 1–21–75, Cl. D30—13.

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First National Bank of Cincinnati, The: *See*—
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Fisher, Morris F. Chair. 234,104, 1–21–75, Cl. D6—42.
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Fladebo, James W., to Mille Lacs Mfg. Co. Flexible artificial leech fish lure. 234,138, 1–21–75, Cl. D22—27.
Ford Motor Co.: *See*—
Snow, Richard F., and Thomasson. 234,142.
France Bed Co., Ltd.: *See*—
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Gelak, Richard G.: *See*—
Bergmann, Karl H., and Gelak. 234,114.
Gellert, Larry M., to The First National Bank of Cincinnati. Lamp. 234,155, 1–21–75, Cl. D48—20.
Gobble, Harold G., and G. L. Bordewyk, to Kellogg Co. Toaster pastry—snack food product. 234,099, 1–21–75, Cl. D1—13.
Goble, Ralph W., to Sontrix, Inc. Piezoelectric transducer assembly for ultrasonic surveillance system or the like. 234,125, 1–21–75, Cl. D10—104.
Goddard, Joseph E. F. Clock. 234,124, 1–21–75, Cl. D10—9.
Graymark Enterprises Inc.: *See*—
Gregg, Gary H. 234,140.
Gregg, Gary H., to Graymark Enterprises Inc. Cabinet for a security syetem. 234,140, 1–21–75, Cl. D26—1.
Grosfillex, Raymond, to Grosfillex S.A.R.L. Chair back or similar article. 234,106, 1–21–75, Cl. D6—197.
Grosfillex S.A.R.L.: *See*—
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Kellogg Co.: *See*—
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Matvey, Joseph J. Decorative vegetation suppressing surround for grave marking structures. 234,161, 1–21–75, Cl. D79—2.
McGrane, Eugene W. Electrical connector. 234,141, 1–21–75, Cl. D26—1.
McLaughlin, Charles W. Fishing lure. 234,139, 1–21–75, Cl. D22—27.
McQuarrie, Harvey K., to Electrohome Ltd. Combined record player housing and stand. 234,157, 1–21–75, Cl. D56—4.
McQuarrie, Harvey K., to Electrohome Ltd. Record player housing. 234,158, 1–21–75, Cl. D56—4.
Melitta, Inc.: *See*—
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Morgon, Eugene L. Scanning receiver or similar article. 234,143, 1–21–75, Cl. D26—14.
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Nielsen, Lloyd A. Toy train. 234,154, 1–21–75, Cl. D34—15.
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Trageser, Ann S. 234,147.
Watson, Timothy T. Cleaning implement. 234,115, 1–21–75, Cl. D7—179.
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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
3R 3,860,966
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CLASS 3
1 3,860,968
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CLASS 4
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67R 3,860,972
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115 3,860,974
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185B 3,860,976
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CLASS 5
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5.3 3,860,981

CLASS 8
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CLASS 15
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CLASS 16
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230C 3,861,876
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203DT 3,861,017
203MW 3,861,015
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574 3,861,023
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331 3,861,091

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98 3,861,096
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241 3,861,103
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650 3,861,107
667 3,861,108
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718 3,861,110
749 Re.28,305
3,861,111
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132BS 3,861,939
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313 3,861,979
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345 3,861,981
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49 3,862,006
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272 3,862,022
290F 3,862,023

CLASS 206
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463 3,861,528
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62 3,862,034
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CLASS 212
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CLASS 222
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400.7 3,861,569
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42.1E 3,861,572

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CLASS 228
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CLASS 229
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23R 3,861,579
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41B 3,861,581
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51TC 3,861,583

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61.11E 3,862,400
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92SB 3,862,402
150.1 3,862,403
151.34 3,862,405
152 3,862,404
3,862,406
155 3,862,407
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DESIGN PATENTS

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PLANT PATENTS

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U. S. GOVERNMENT PRINTING OFFICE : O - 1975

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, *Commissioner*